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FINAL REPORT

PORTABLE MEDICAL STATUS SYSTEM

Contract NAS 9-14334

Submitted to

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Lyndon B. Johnson Space Center
Houston, Texas

Ву

TELECARE, INC. 8575 Mosley Road Houston, Texas 77034

August, 1975



1.0 SCOPE

The purpose of this report is to summarize the final results in the performance of Contract NAS 9-14334.

4.0 ACCOMPLISHMENTS

On July 18, 1975, the acceptance test was successfully completed and the operational unit ("feasibility breadboard") was received by the Technical Monitor. The appropriate DD250 forms were completed and are submitted with the final report.

All of the requirements of the Statement of Work were successfully completed. Enclosed is a drawing package (Appendix A) which includes electrical schematics and outline drawings as required by Paragraph 3.6.3 of the Statement of Work. Figures 2.0-1, 2.0-2, and 2.0-3 are photographs of the completed, operational unit.

The most significant problem encountered in the development of the Portable Medical Status System was associated with the Liquid Crystal Digital Displays. A significant mechanical contact problem was initially encountered which required a redesign for the electrical connector brackets. Then, it was found that the displays did not exhibit the desired amount of contrast at low ambient light levels. Visibility of the displays in a darkened room could be enhanced by the use of a penlight. Recent developments in liquid crystals have enhanced the available contrast ratios. Thus, it may be possible to continue to use the low-powered liquid crystal displays without the nuisance of loss of visibility at low light levels.

The final weight of the unit was 29 pounds. All supplies were fitted into the allocated volume; however, it is a tight fit.

3.0 RECOMMENDATIONS FOR FUTURE UNITS

The following recommendations are submitted for future units of this type.

3.1 Liquid Crystal Displays

Investigate new developments in liquid crystal displays with enhanced contrast ratios. Compare these displays with Light Emitting Diode and other types for



Figure 2.0-1 - Portable Medical Status System in Transit

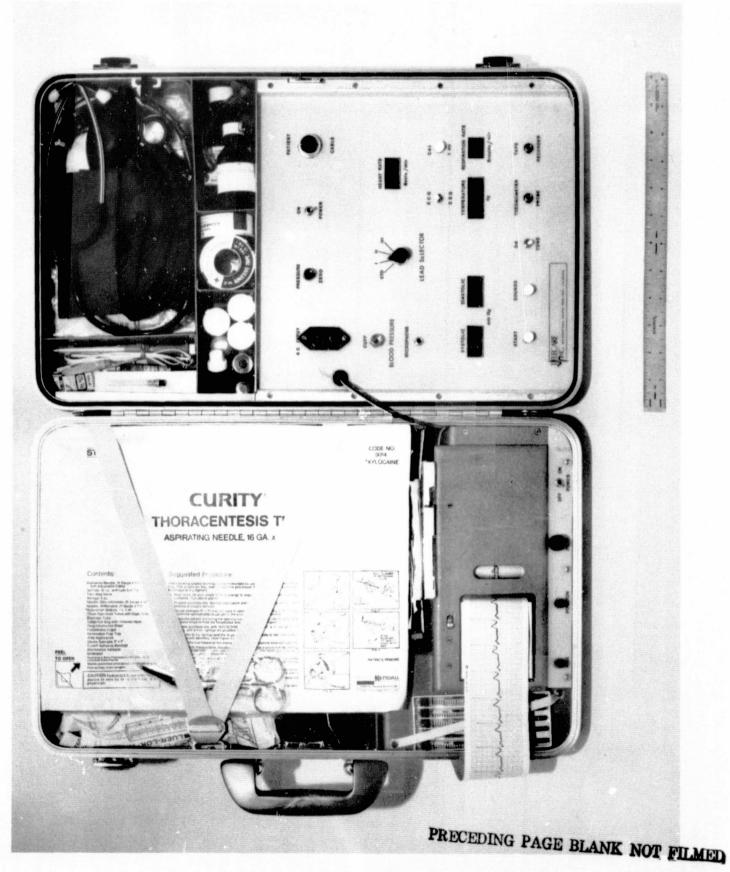


Figure 2.0-2 - Portable Medical Status System opened for use.

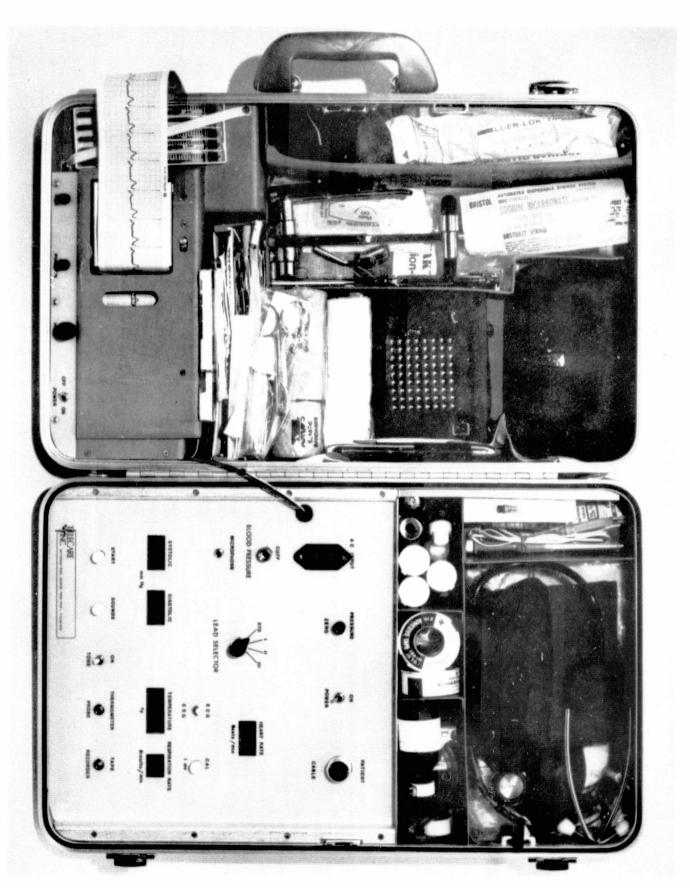


Figure 2.0-3 - Portable Medical Status System with Combination Thoracentesis/Spinal Puncture Kit Removed.

visibility and general applicability on this instrument.

3.2 Miniaturization of Circuitry

Investigate the space savings which could be accomplished by hybridizing portions of the electronics circuitry. Perhaps a large portion of the electronics circuitry could be miniaturized such that additional space could be made available for medical supplies.

3.3 ECG Receiver Circuitry

Investigate the feasibility of adding an ECG receiver circuit to the unit which would accept an input from a telephone or a portable radio. The ECG could then be recorded using the strip chart recorder. Such an addition would add potential uses for the portable medical status system since the physician could also use the instrument to receive ECG's from his patients while the physician is at a remote site such as his office or home.

APPENDIX A

DRAWING PACKAGE

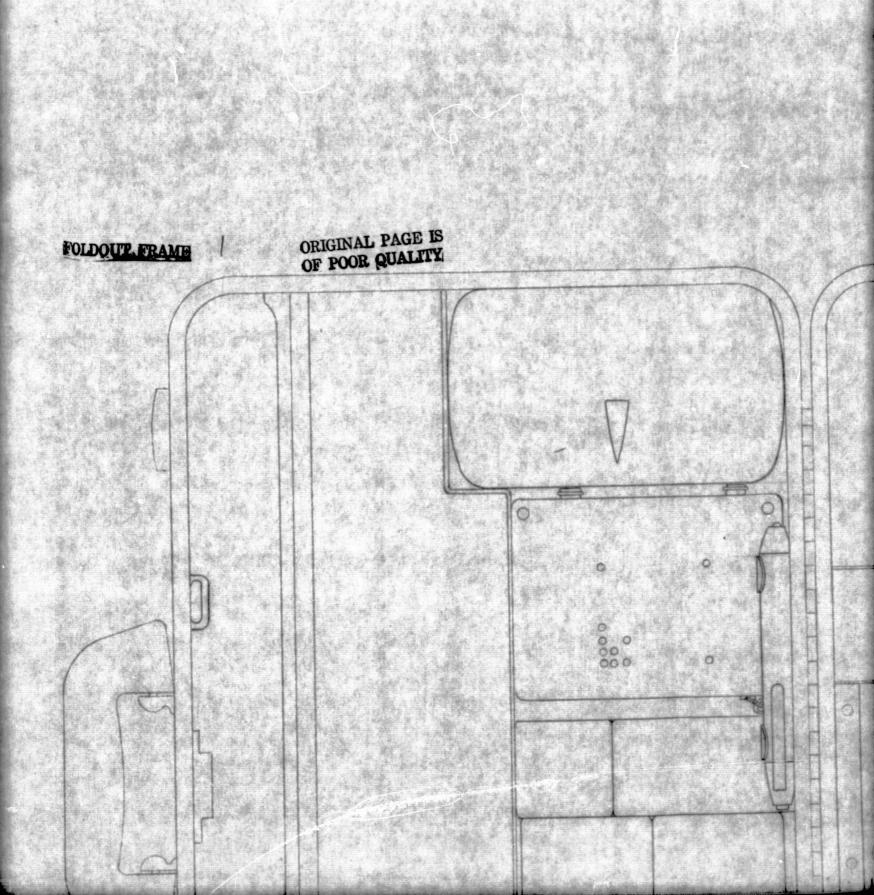
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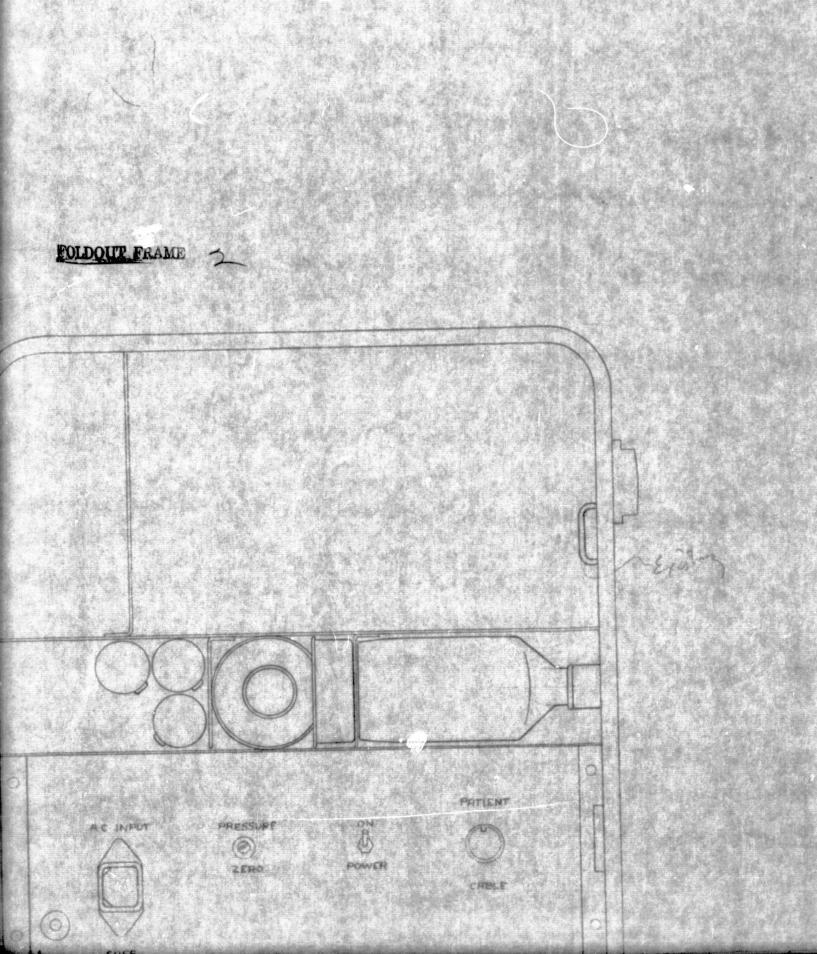
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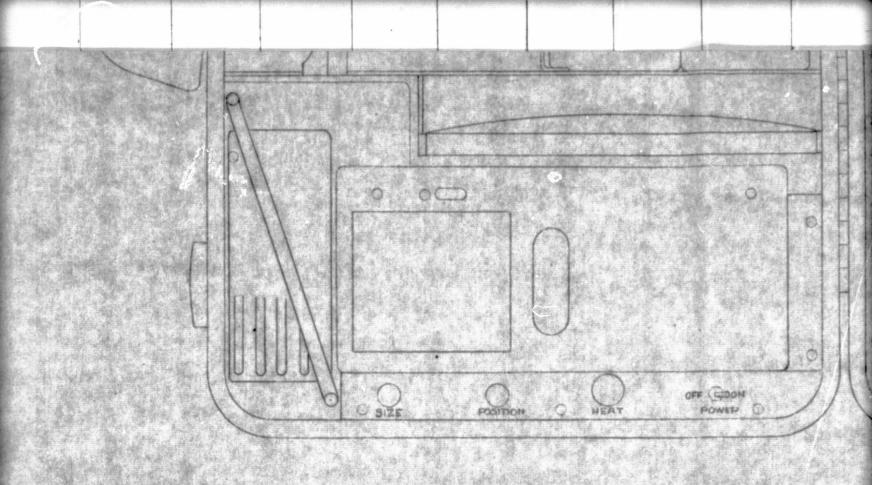
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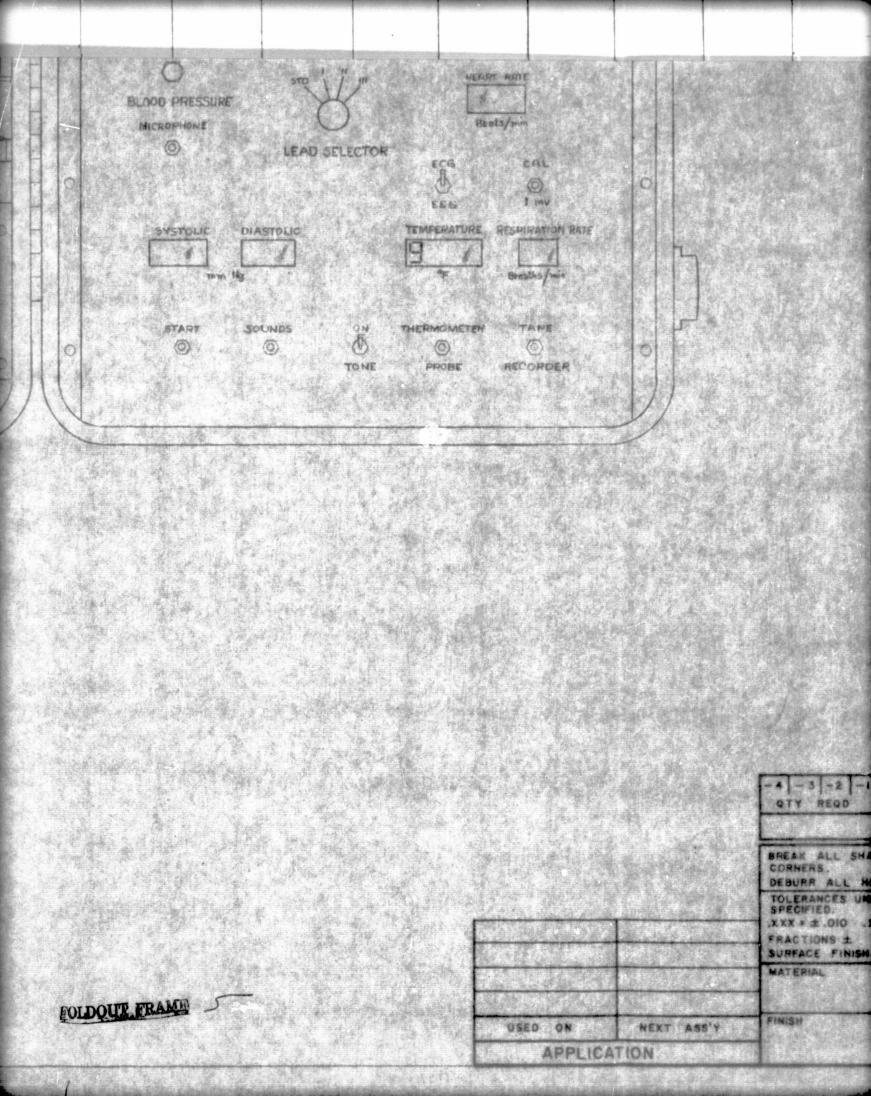


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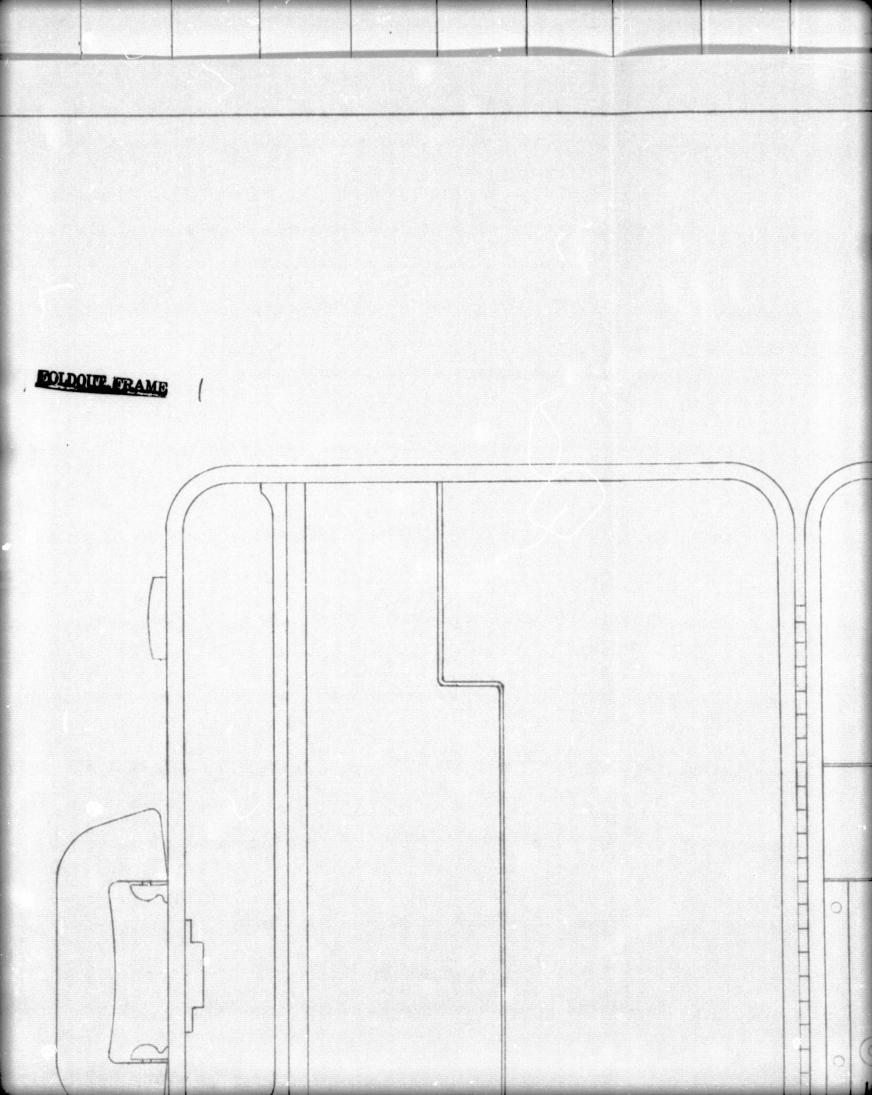


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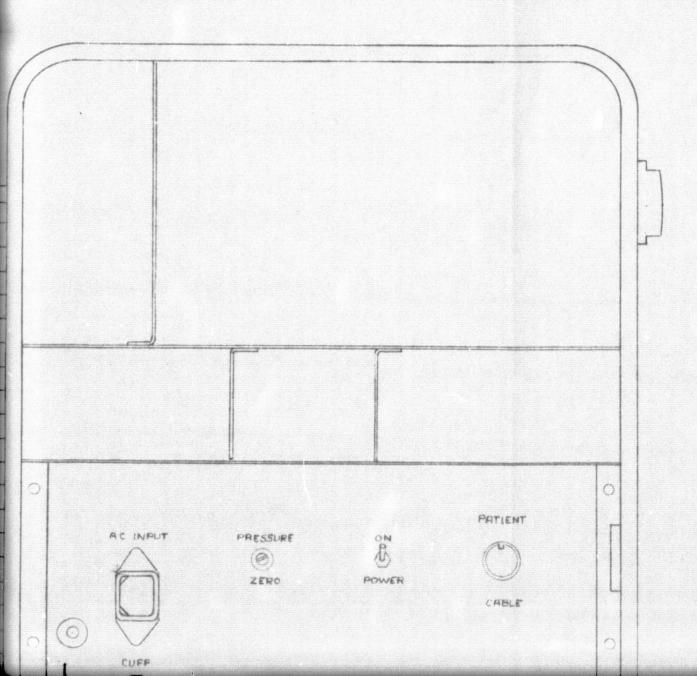


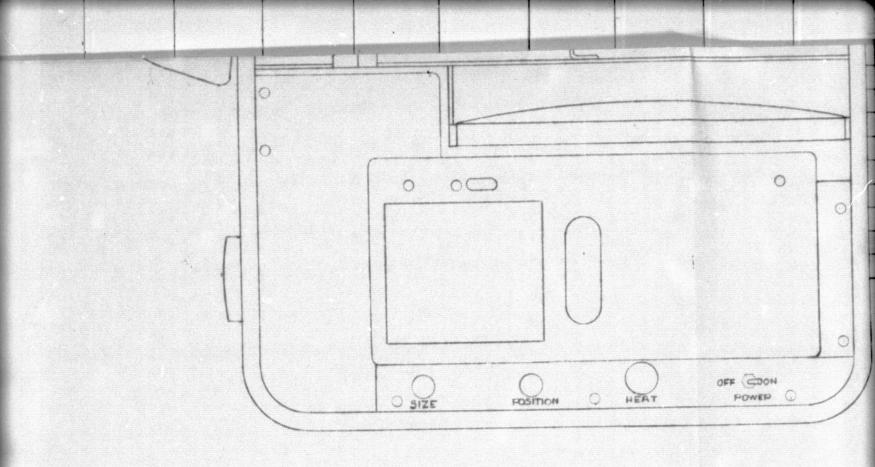


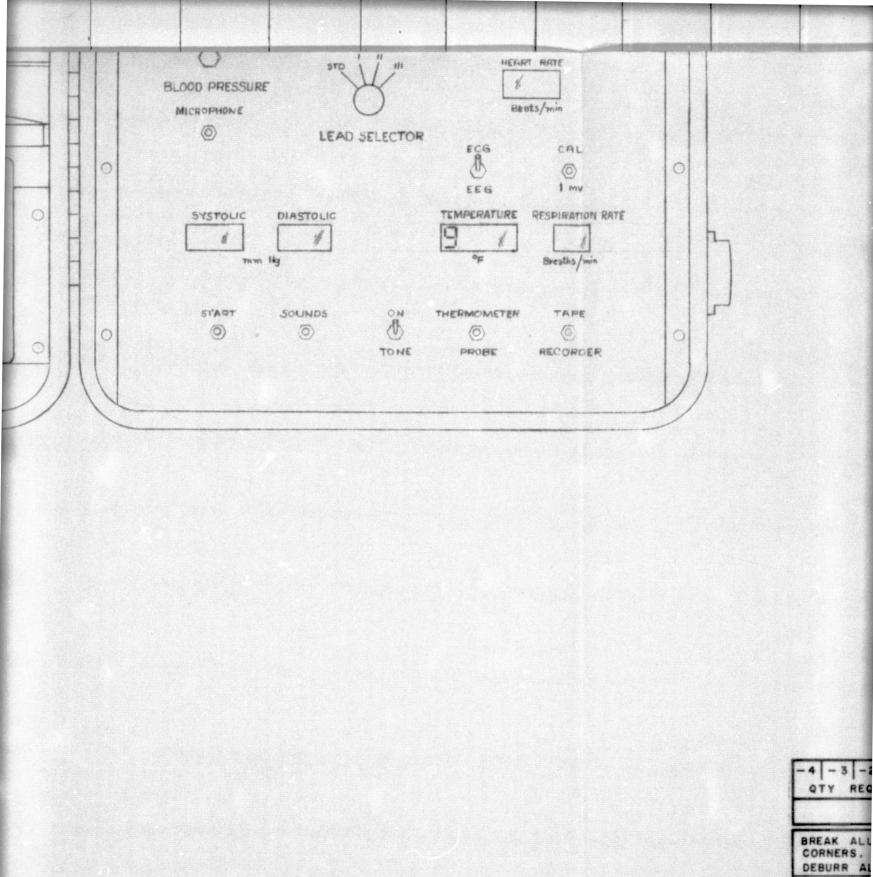
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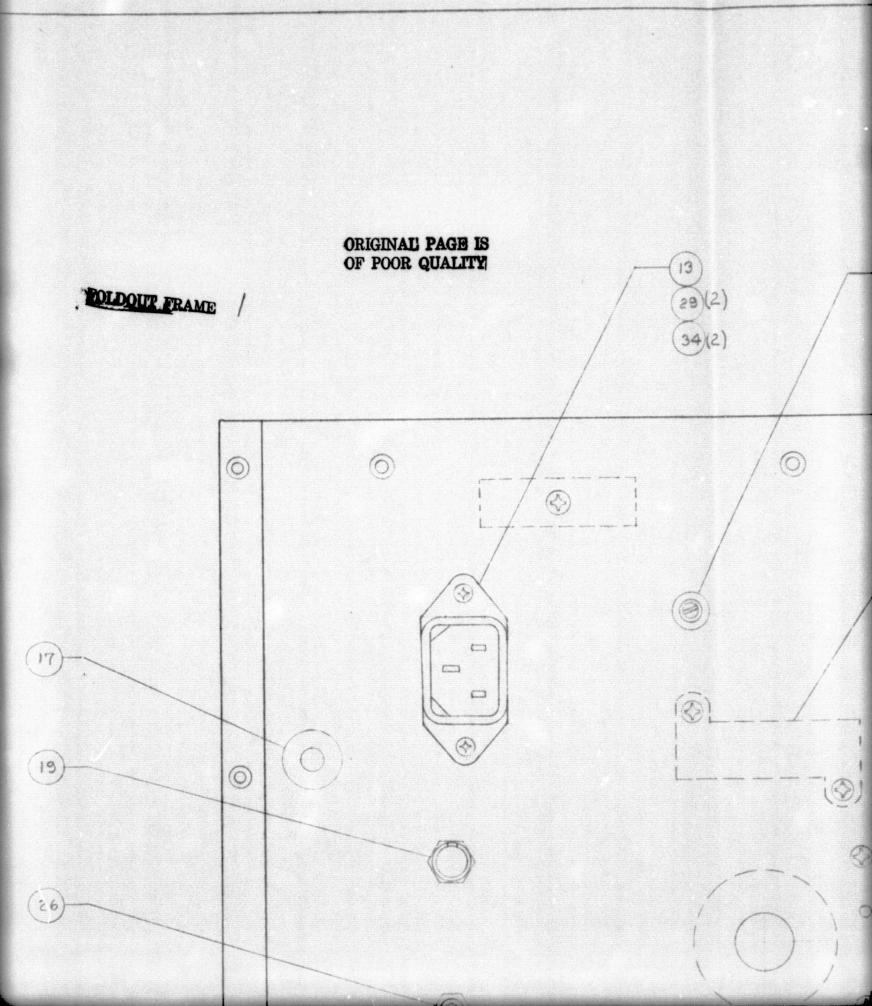
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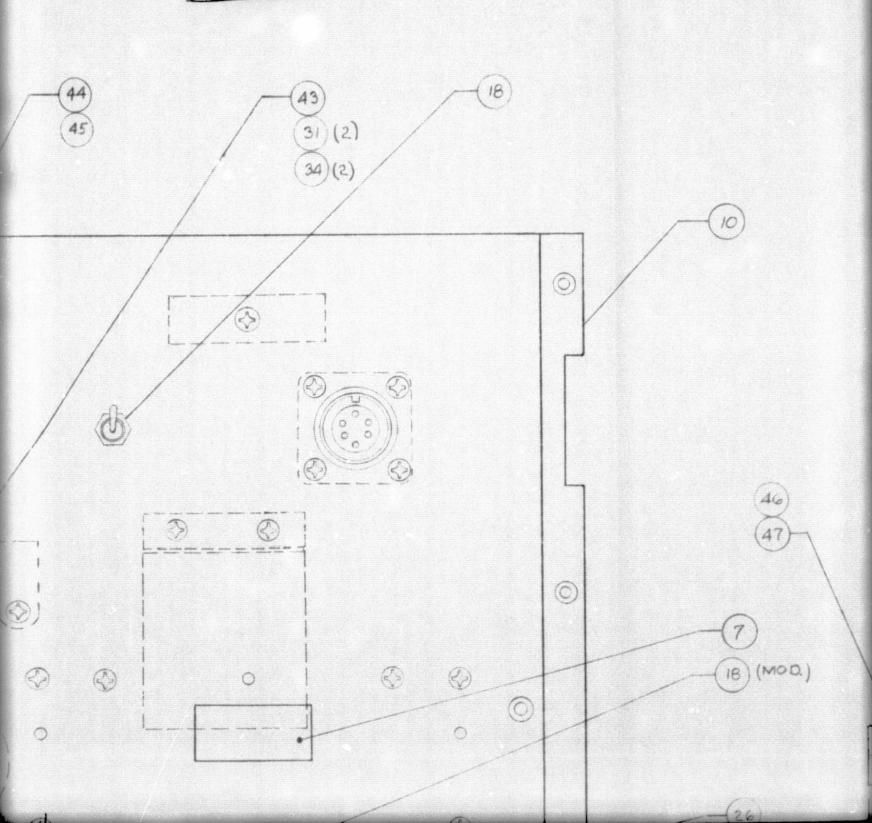
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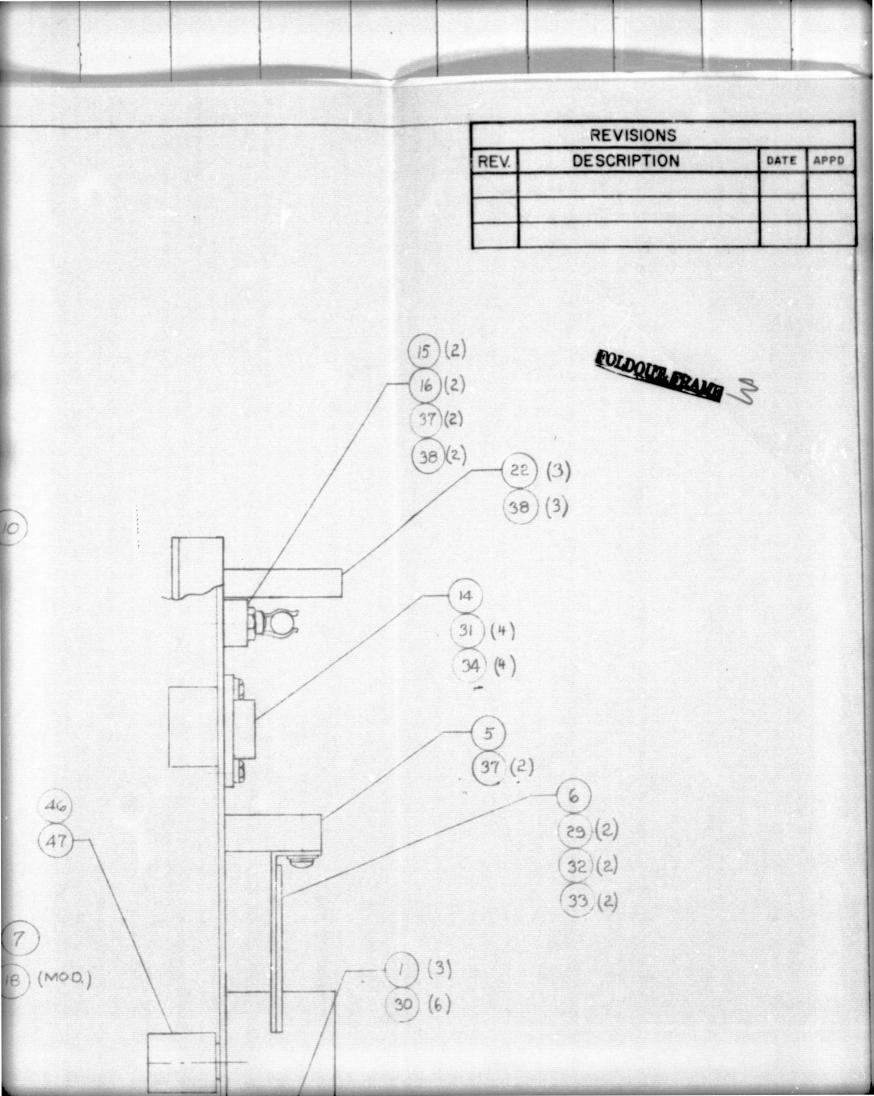
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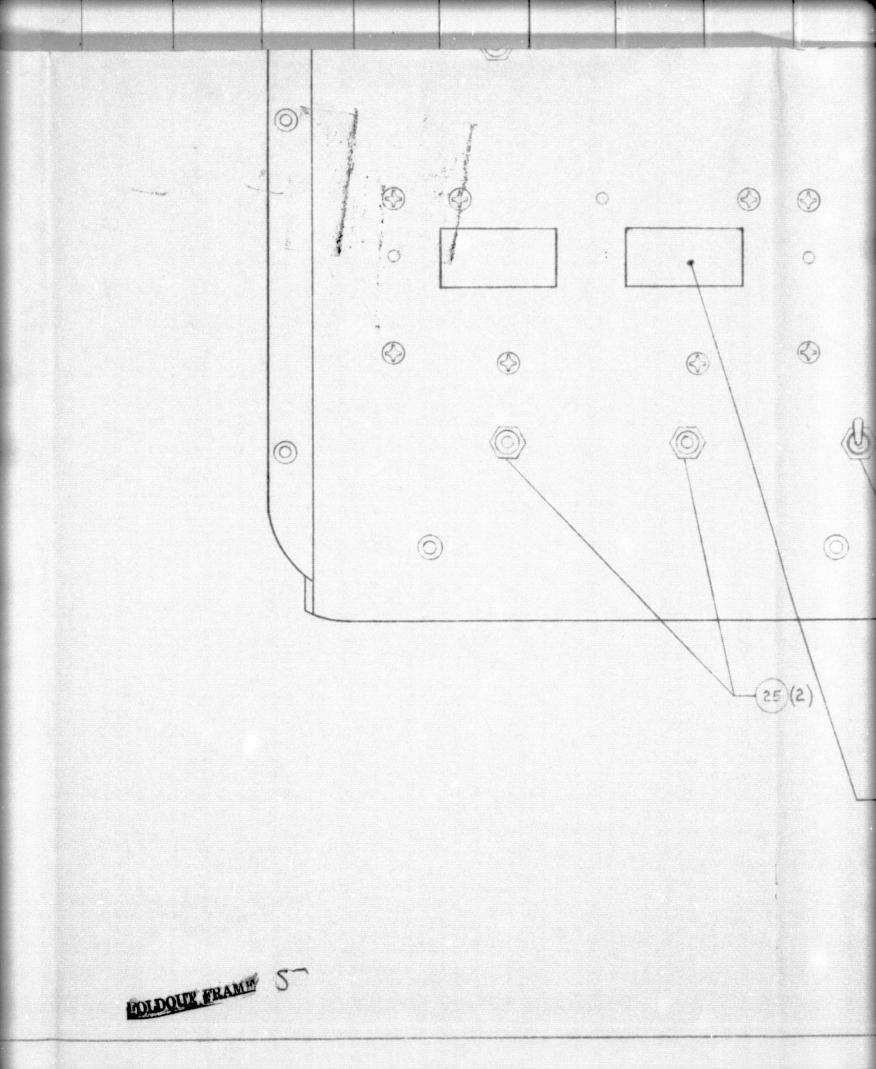
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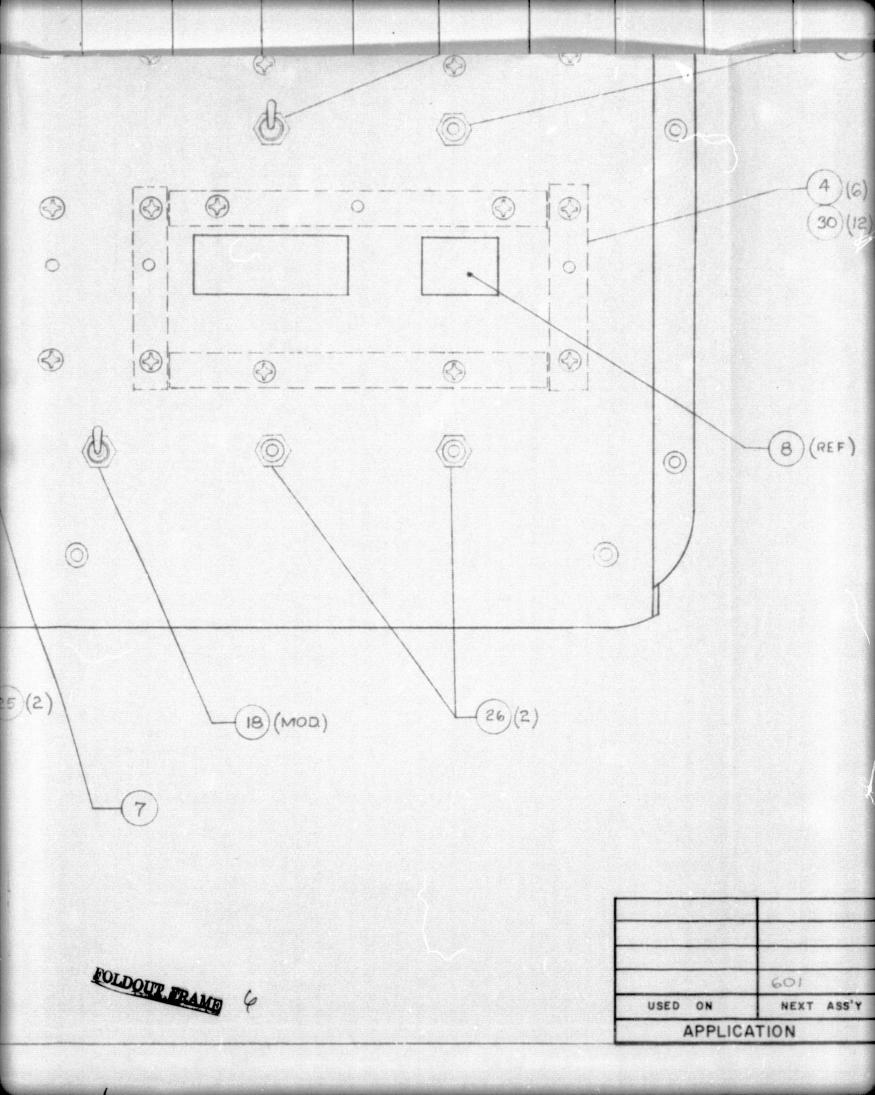


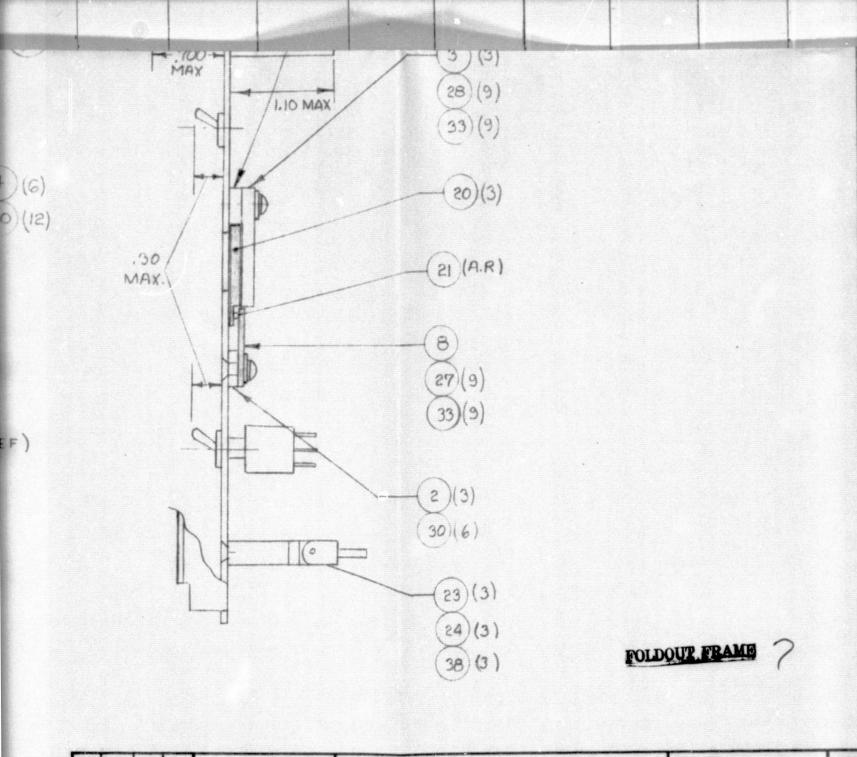


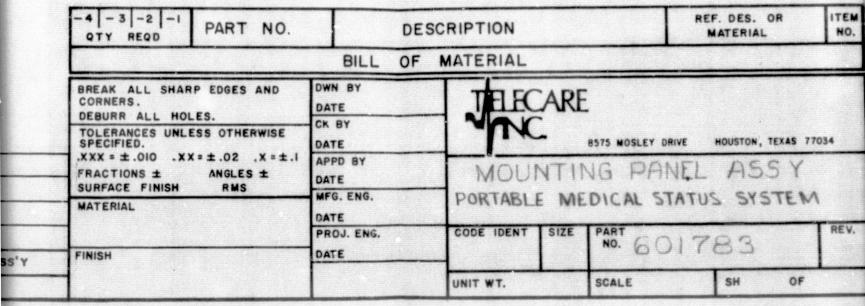
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- 2. ONLY ONE LCD ASSEMBLY SHOWN
- 3. IMPORTANT HOLD .30 , .70 \$ 1.10 MAX. DIMS.









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	6	400603	GUIDE			4
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	1	400643	CRYSTOL ASS'Y			6
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	1	501486	LCO PIC CARD			8
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	3		SPACER 5/8 Lg	KEYSTONE 1548 D		23
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	6	128231-6106	SCREW, F.H #4:40 3/8 Lq			31
	2	128233-1100	WASHER, FLAT #4			32
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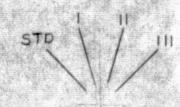
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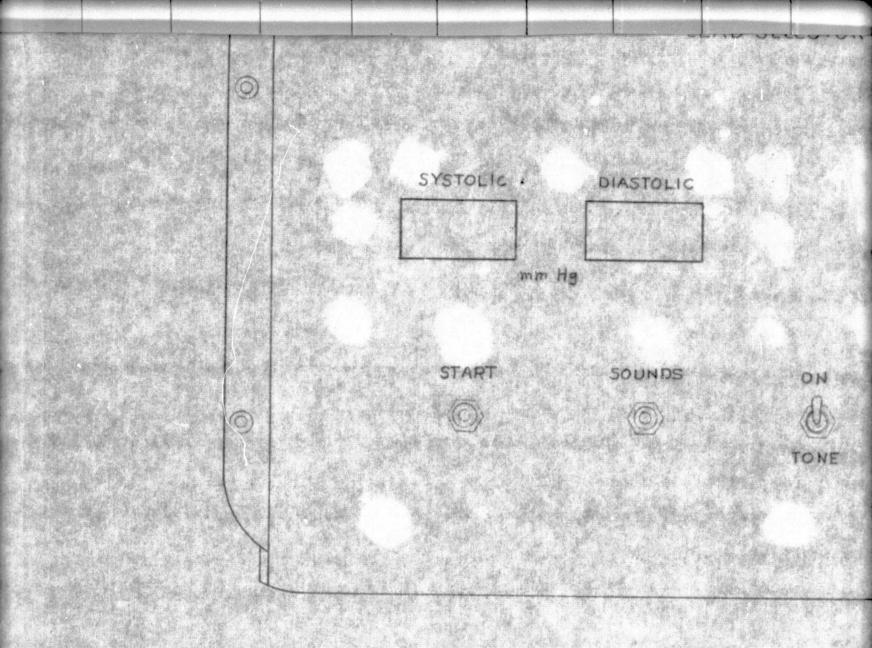
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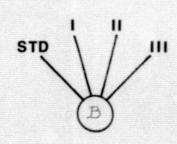


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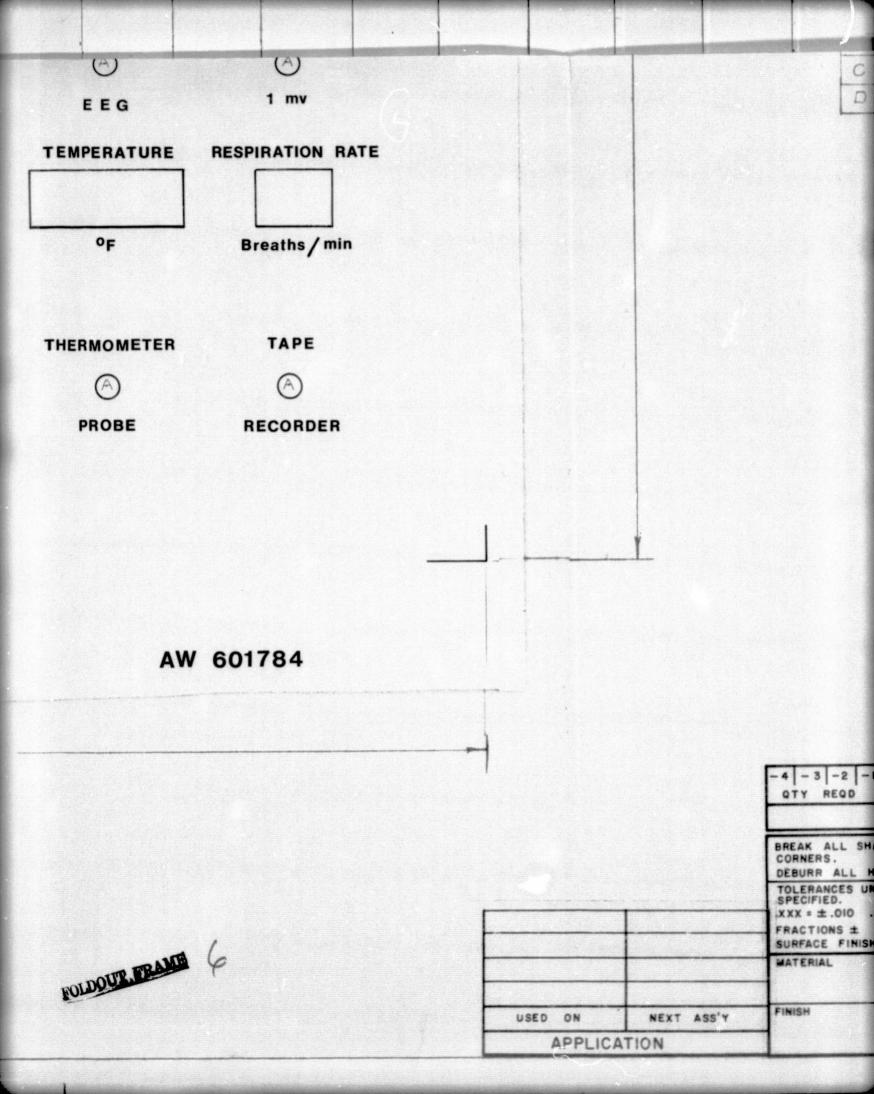
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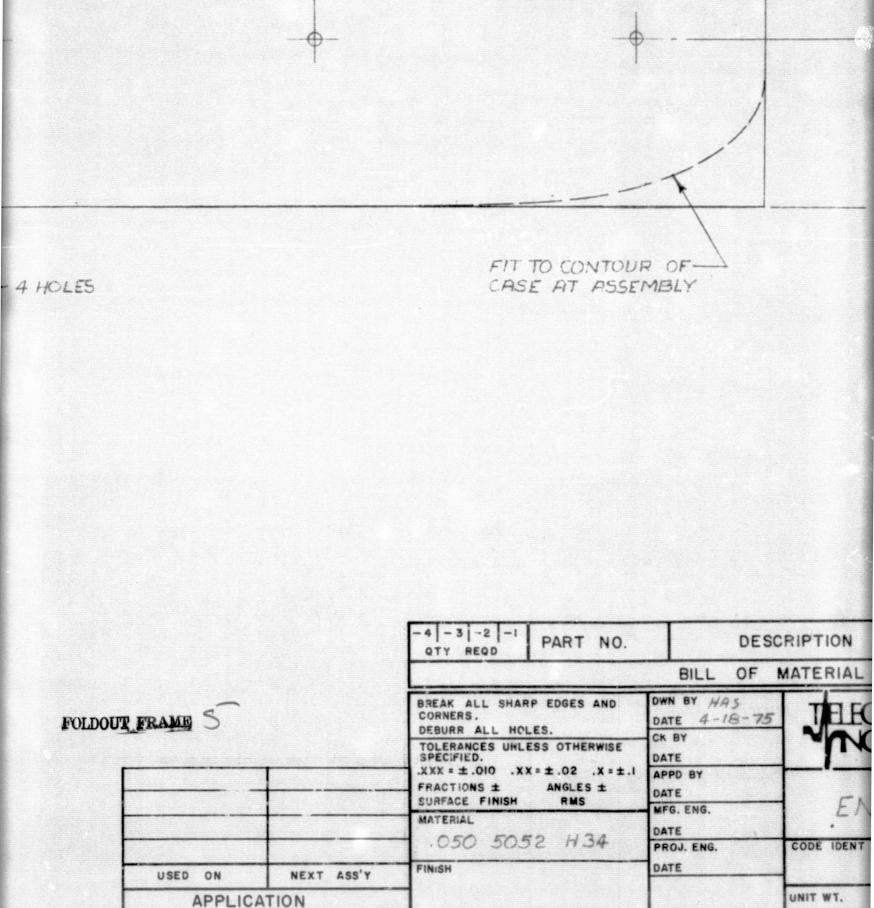
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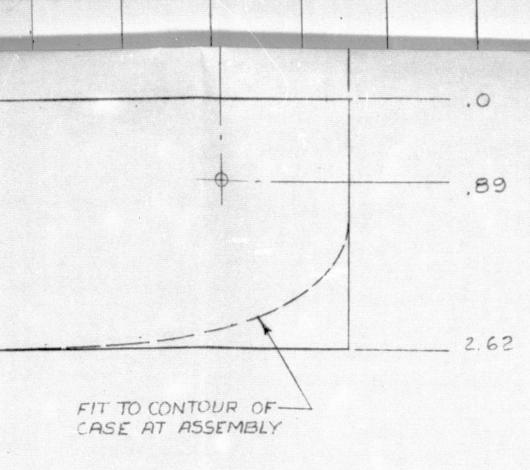
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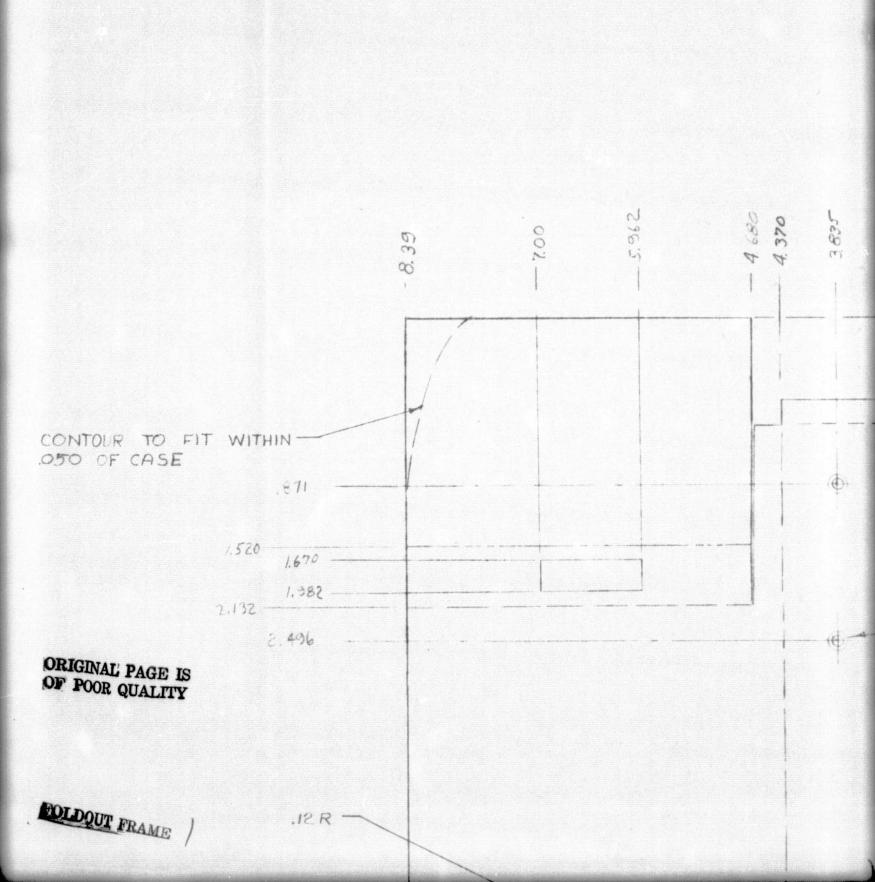
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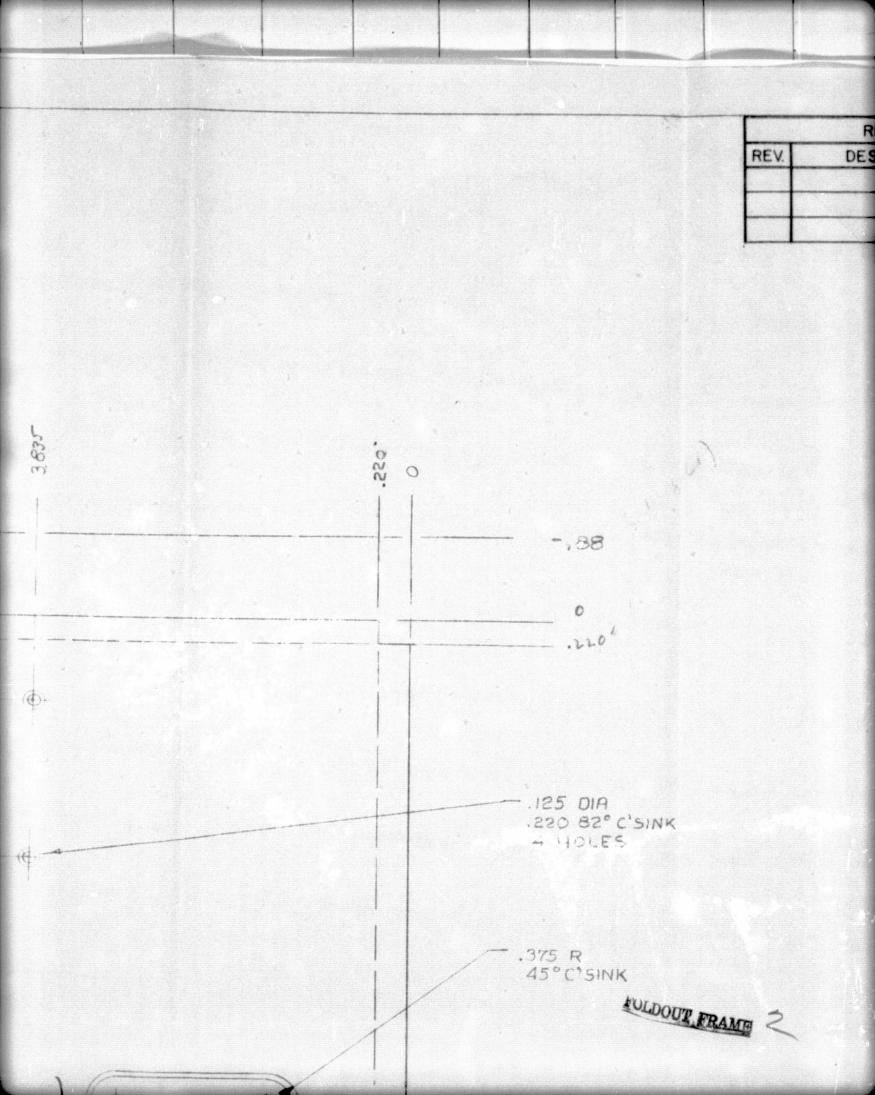


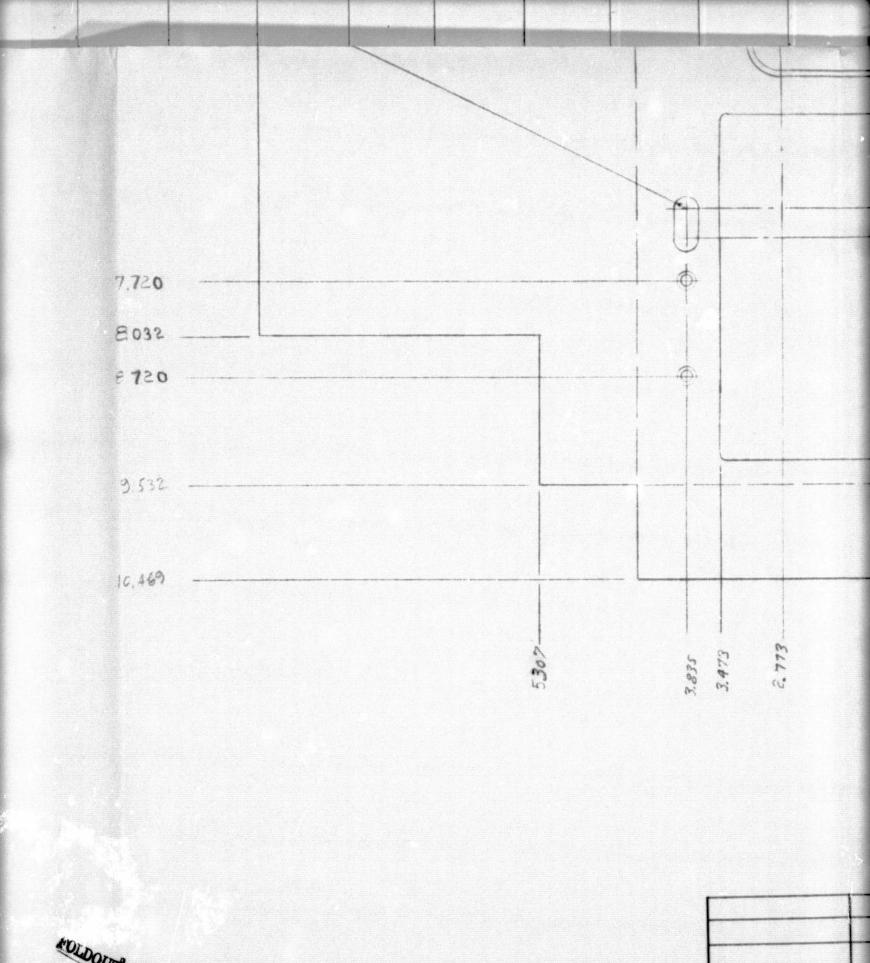




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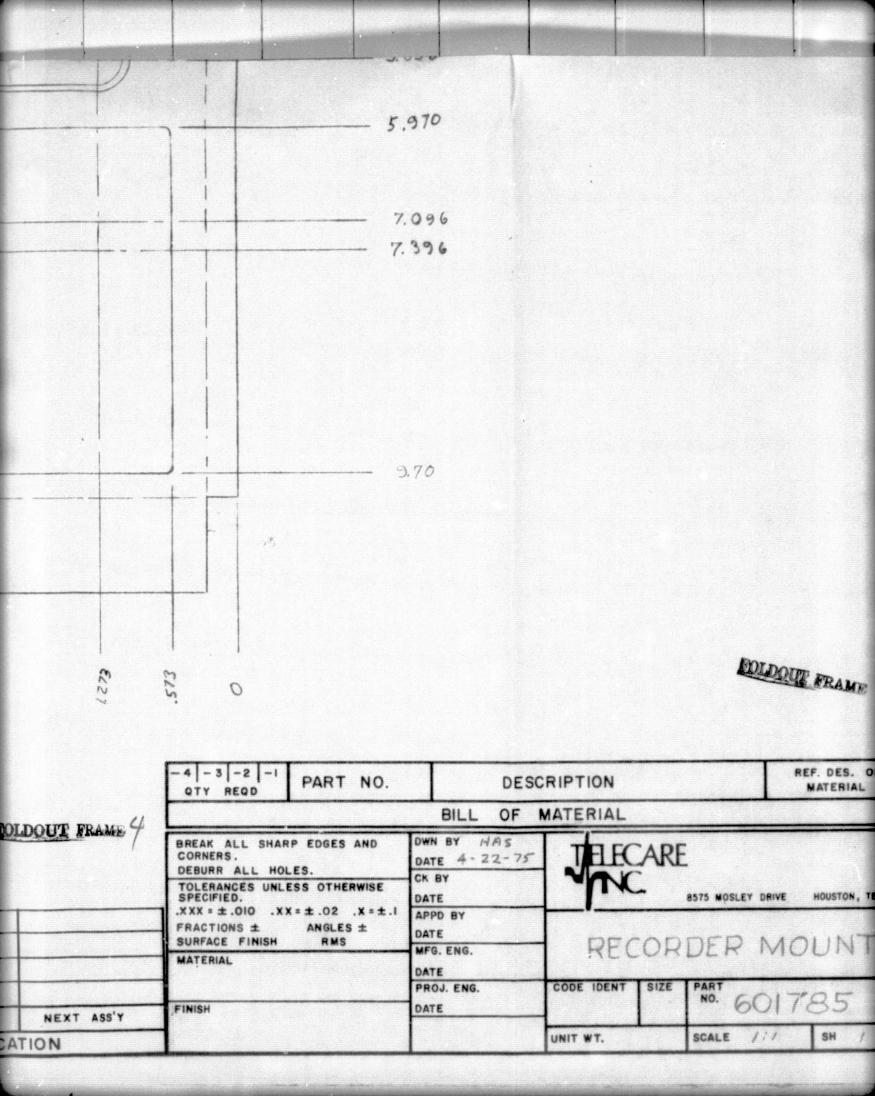


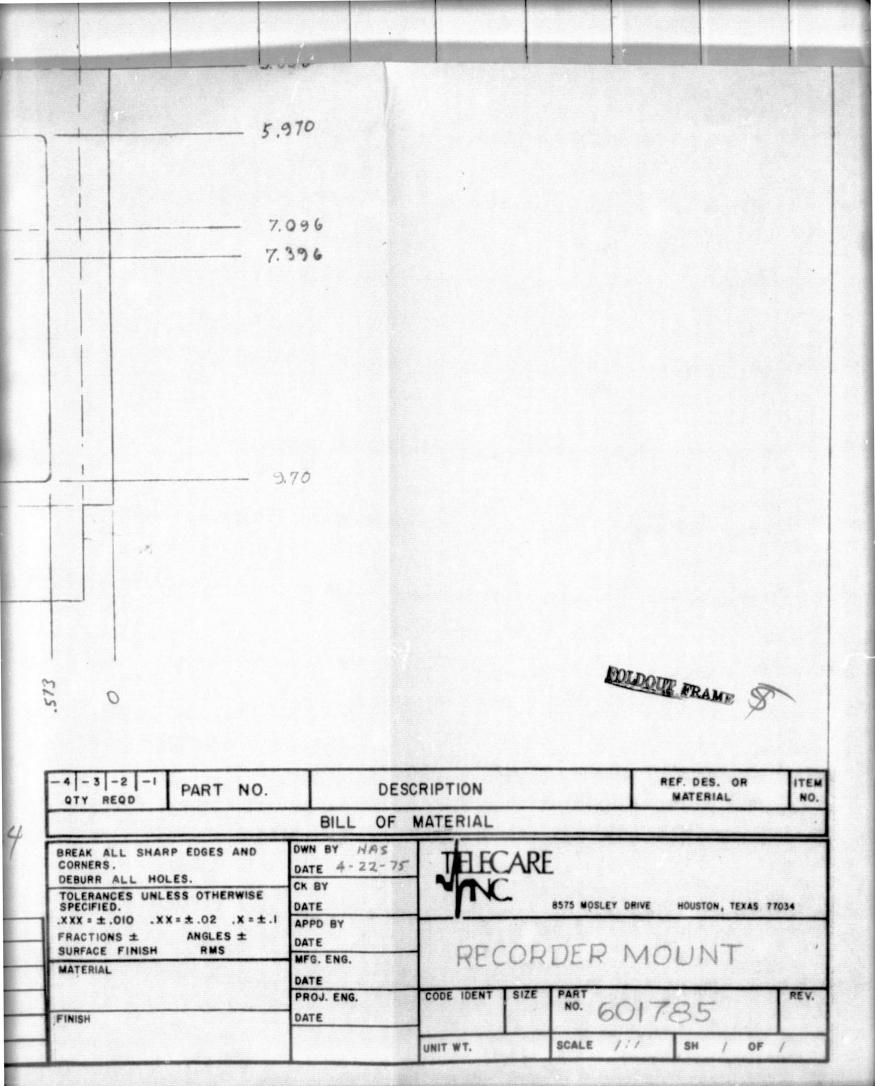


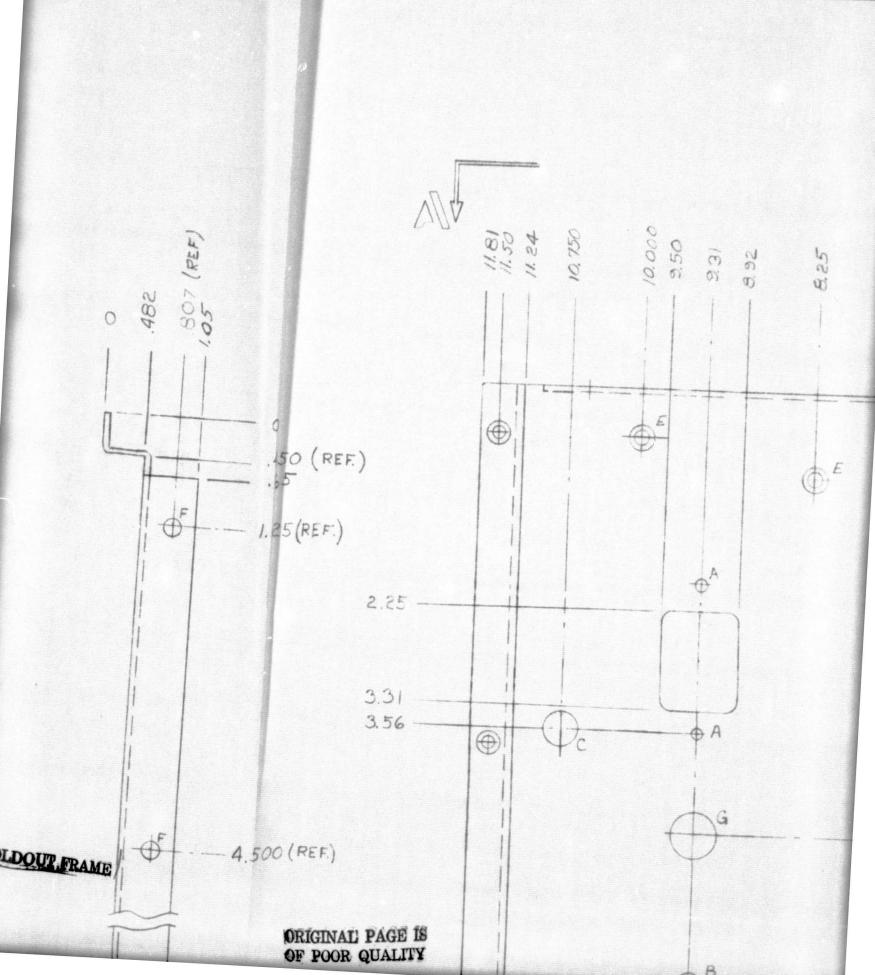


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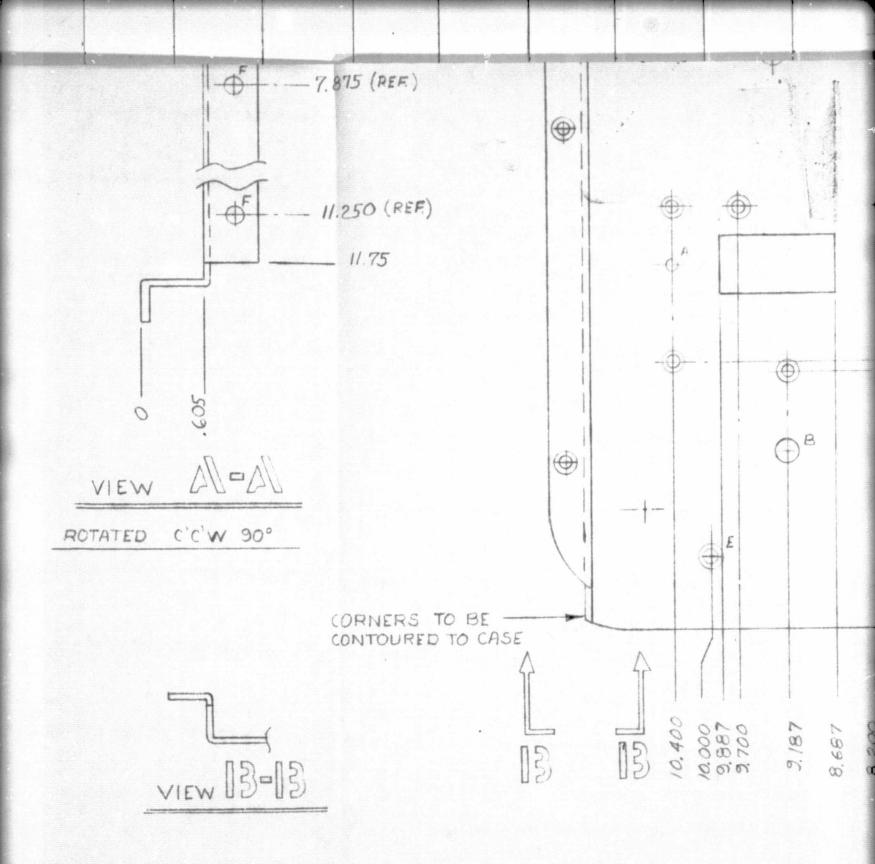
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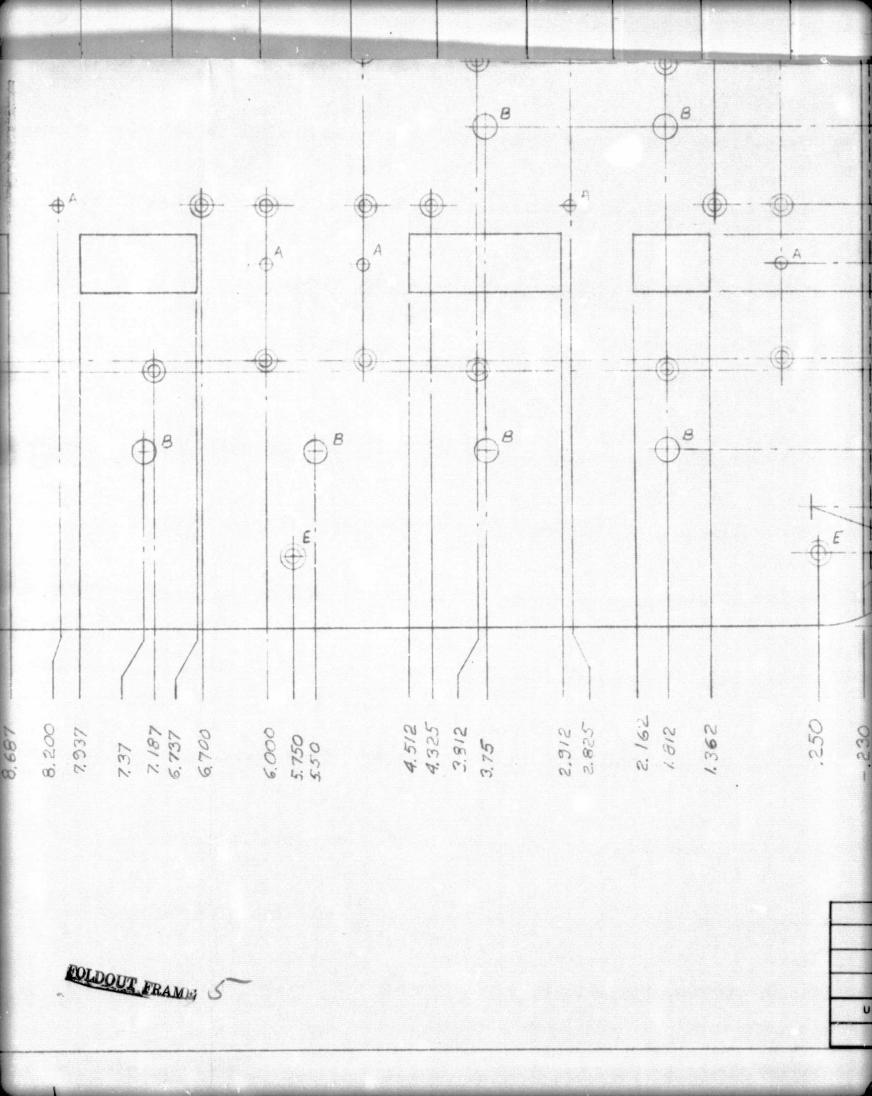
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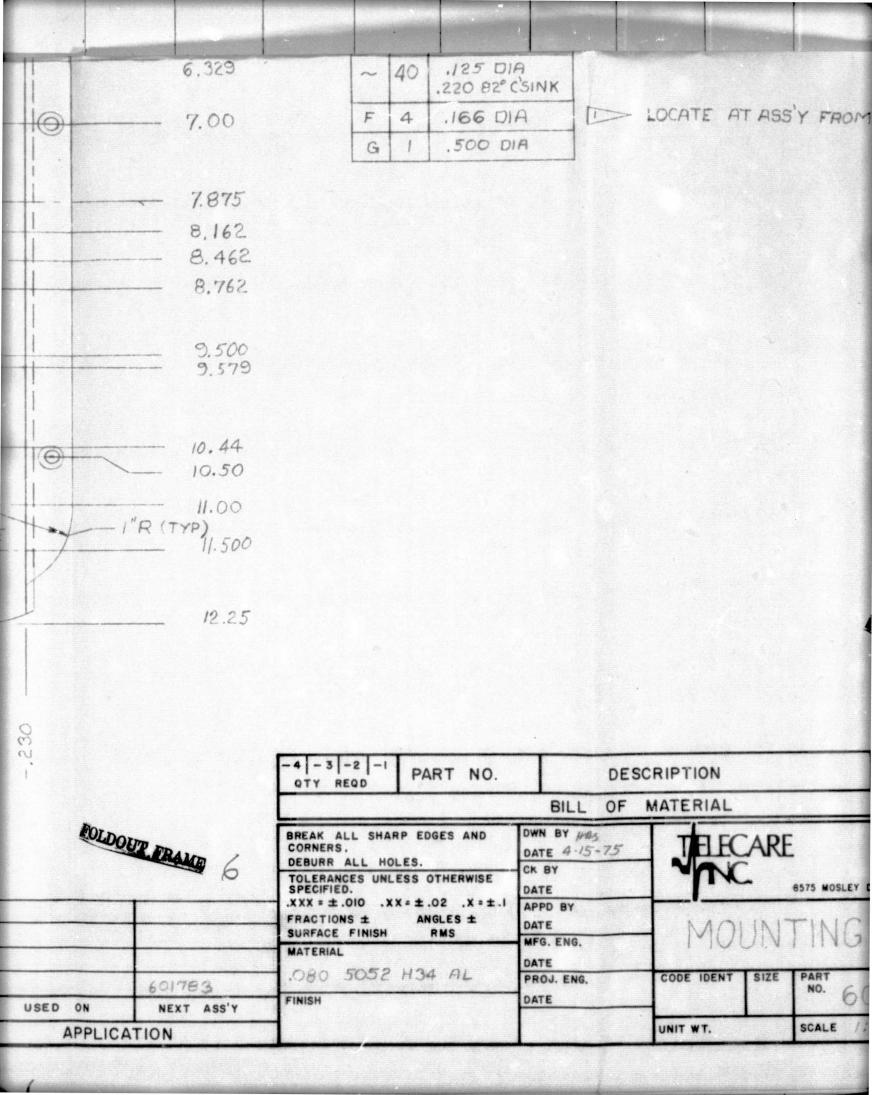


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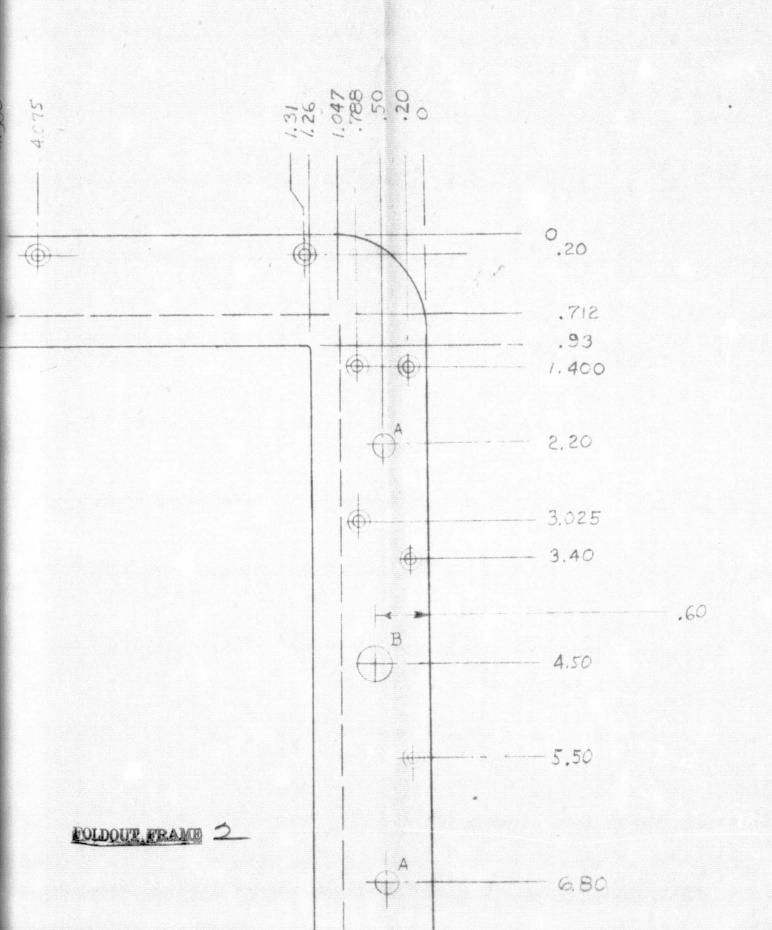
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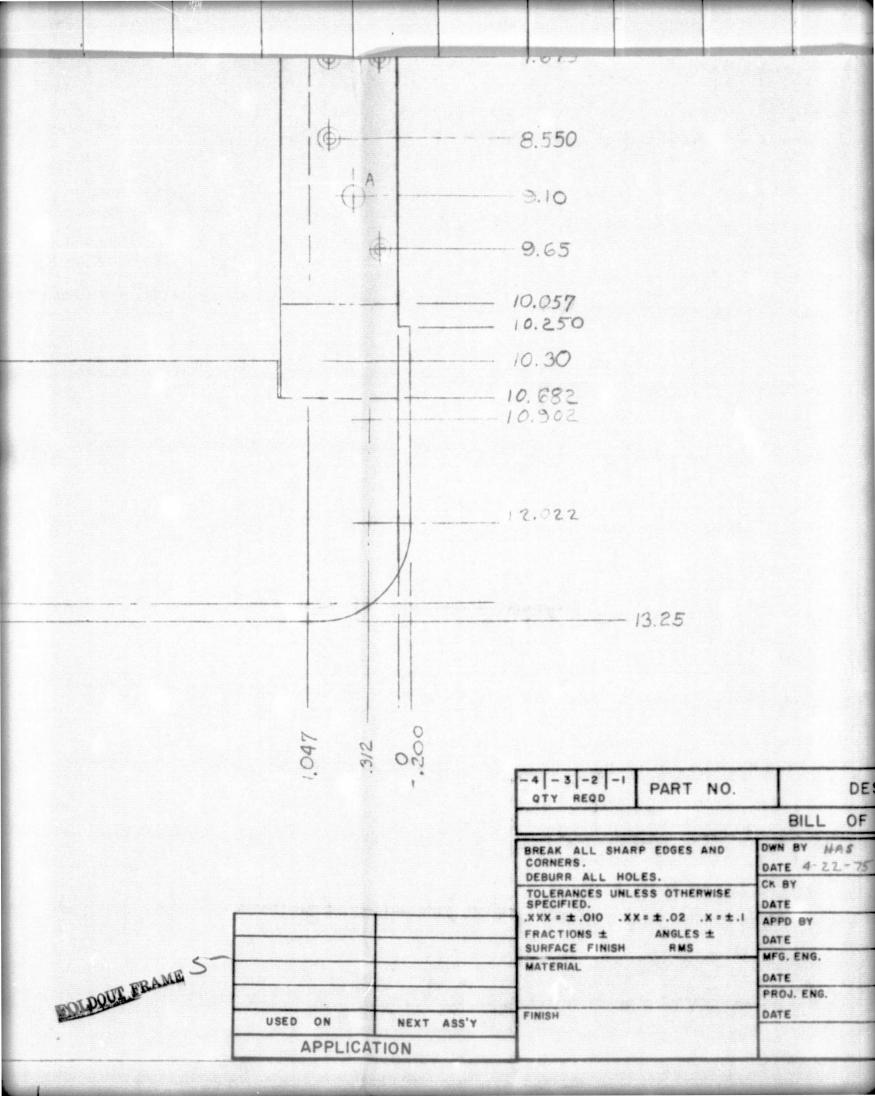
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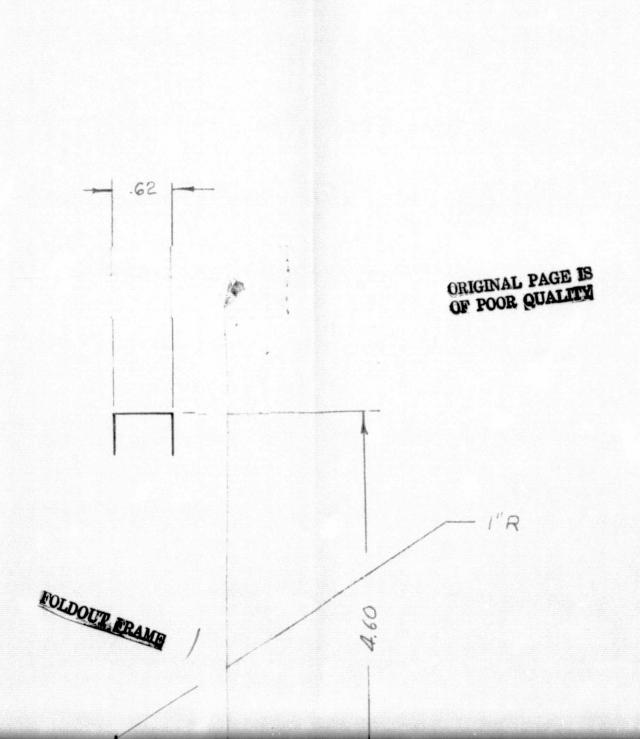
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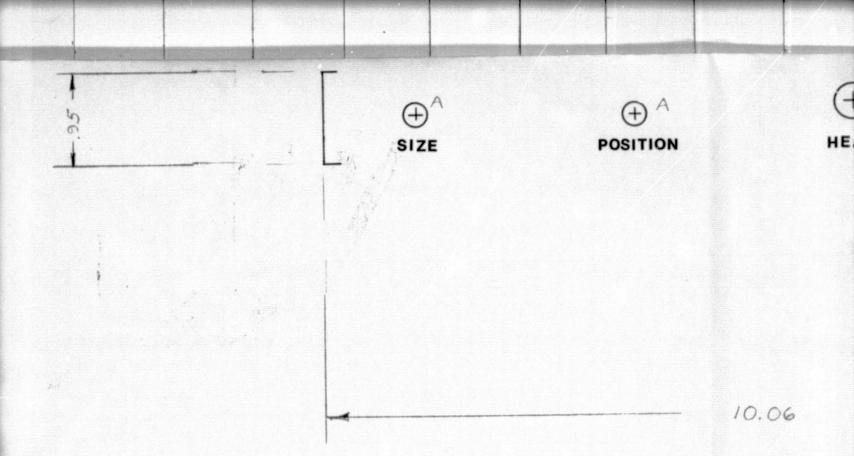
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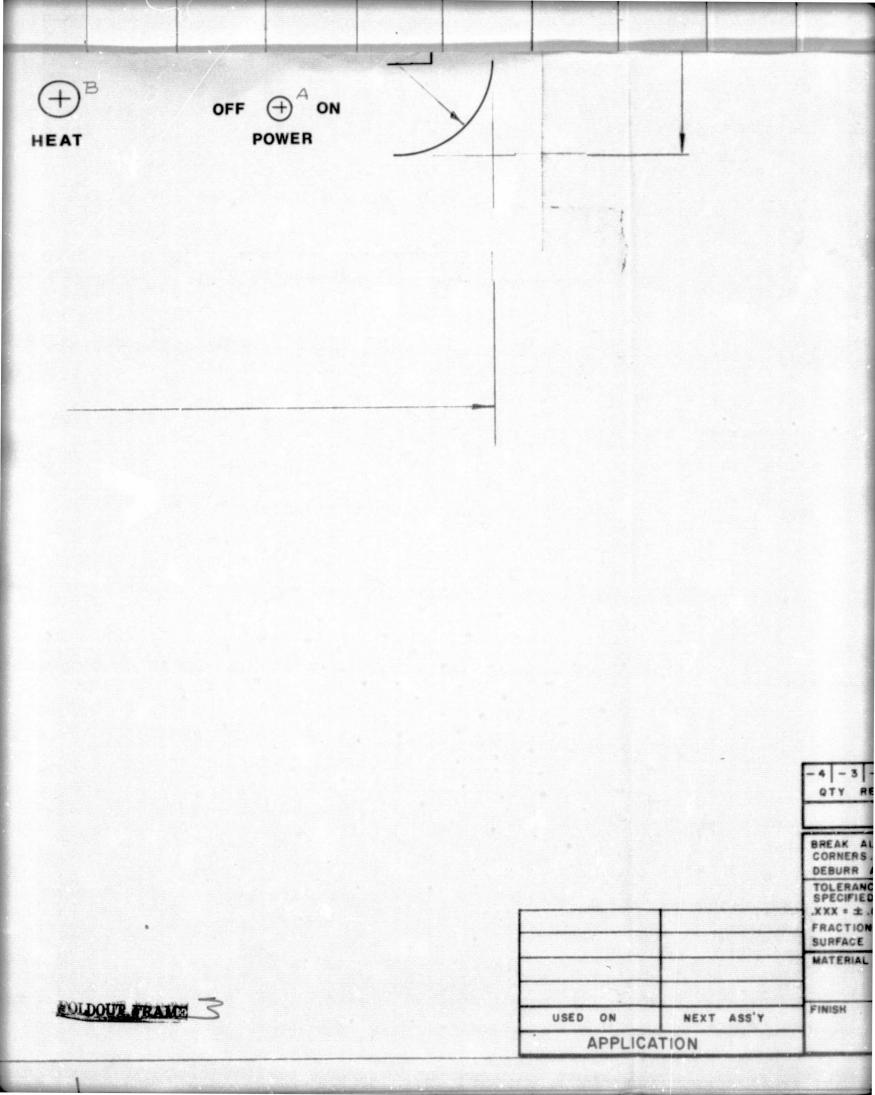
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		UNIT WT.	SCALE /	/ SH / OF	1



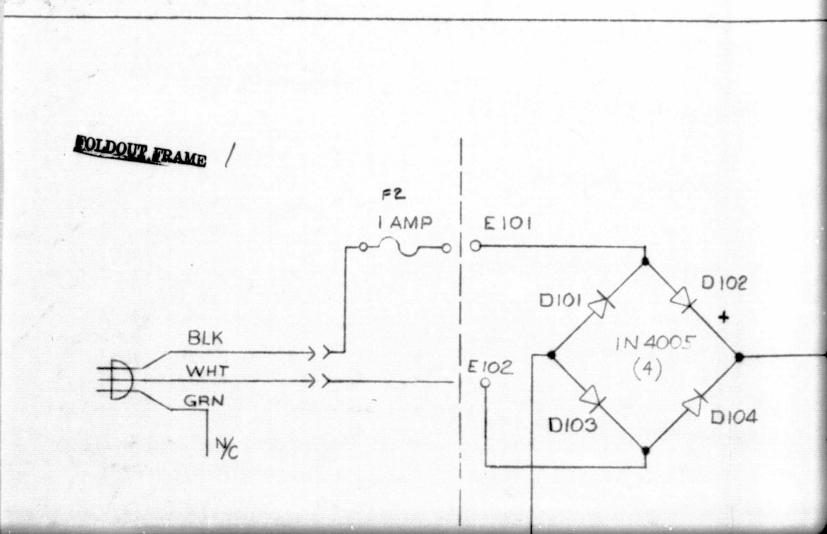




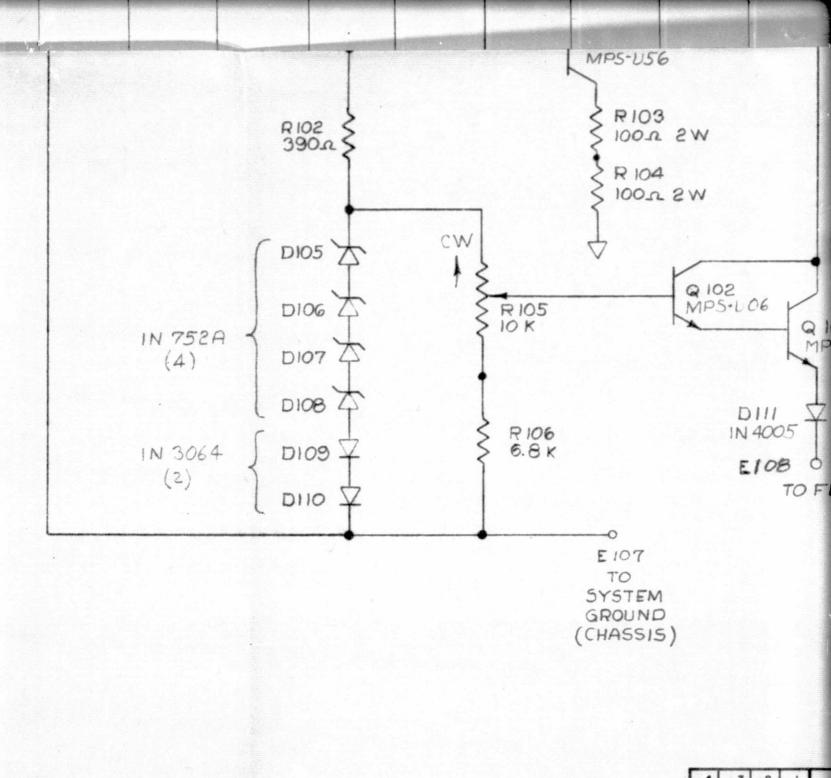
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5YM	No	DESC.
Α	3	.260 DIA
В	1	.375 DIA

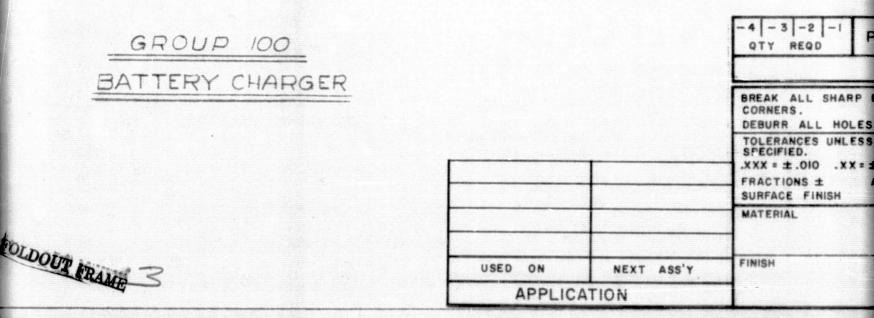


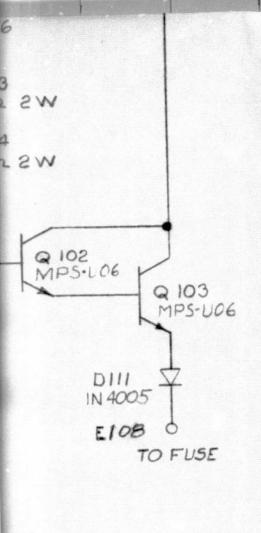
-4 - 3 -2 -1 PART NO.	DES	CRIPTION			REF. DES. OR MATERIAL	NO.
	BILL OF	MATERIAL				
BREAK ALL SHARP EDGES AND CORNERS. DEBURR ALL HOLES. TOLERANCES UNLESS OTHERWISE	DWN BY 11.45 DATE 4-22.75 CK BY	JHK.	AR	E 8575 MOSLEY DRIVE	HOUSTON, TEXAS	77034
SPECIFIED. XXX = ± .010 .XX = ± .02 .X = ± .1 FRACTIONS ± ANGLES ± SURFACE FINISH RMS	DATE APPD BY DATE	- PF	col		VERLAY	
MATERIAL	MFG. ENG.	IVE	COI	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	V / 1 1	
	PROJ. ENG.	CODE IDENT	ŞIZE	NO. A VI	601787	REV.
FINISH	DASH NO	UNIT WT.		SCALE /:/	SH OF	



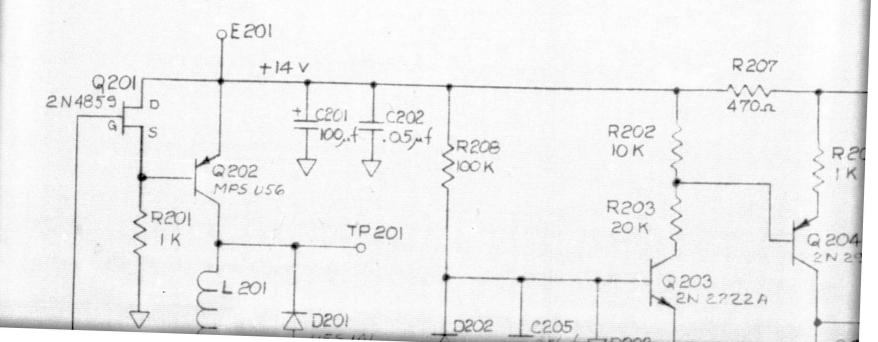
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	the state of the s				we we	
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1	$\longrightarrow \longrightarrow \longrightarrow \longleftarrow$					
	RIOT	7-1K				
	(ON CHA	13313)				
BIN						
₹ RIO	1W					
> 10 1	* * * *					







4 - 3 -2 -1 REF. DES. OR ITEM DESCRIPTION PART NO. MATERIAL NO. QTY REQD OF MATERIAL BILL DWN BY BREAK ALL SHARP EDGES AND ELECARE CORNERS. 5-5-75 DATE DEBURR ALL HOLES. CK BY TOLERANCES UNLESS OTHERWISE 8575 MOSLEY DRIVE HOUSTON, TEXAS 77034 SPECIFIED. DATE 1. ± = X. SO. ± = XX. 010. ± = XXX. APPD BY PORTABLE MEDICAL STA FRACTIONS ± ANGLES ± DATE SURFACE FINISH RMS GROUP 100 MFG. ENG. MATERIAL DATE CODE IDENT SIZE PART REV. PROJ ENG. NO. DATE 18 JUL 75 FINISH UNIT WT. SCALE OF

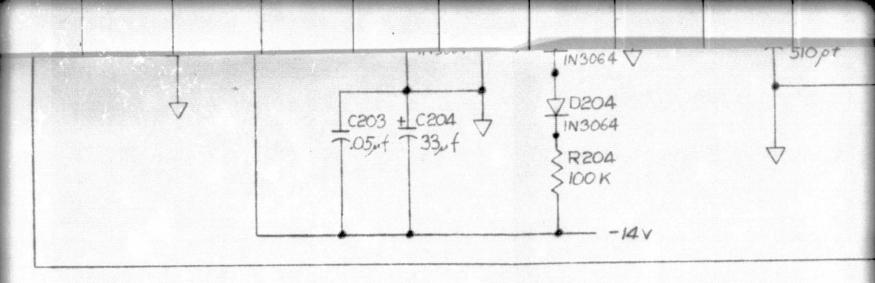


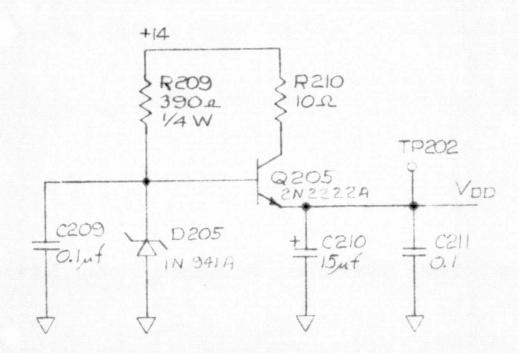
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OF POOR QUALITY

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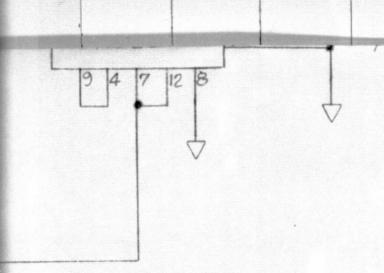
	REVISIONS	
REV.	DESCRIPTION	

1,4		
₹ <i>2</i> 05 K	9 +14 V	
04 12907A	16 13 3 5 11	R206 5.6 K
0206	14 15 Z 201	1 c208 T 510pf





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USED ON	NEX
APPLIC	ATION



GROUP 200 OWER SUPPLY

L 201

CORE: MAGNETICS, INC 55050 - A2 77 TURNS NO. 24

-4 - 3 -2 -1 PART NO.	DESC	CRIPTION			REF. DES. OR MATERIAL	ITEM NO.
	BILL OF	MATERIAL				
TOLERANCES UNLESS OTHERWISE SPECIFIED.	DWN BY HAS DATE 5-6-75 CK BY DATE APPD BY DATE	PORTAE	BLE	8575 MOSLEY DRIVE	STATUS SY	
MATERIAL	MFG. ENG. DATE		GR	OUP 200		
FINISH	PROJ. ENG.	CODE IDENT	SIZE	NO. 50	1354	REV.
		UNIT WT.		SCALE	SH / OF	1

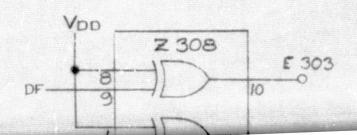
FOLDOUT FRAME / Vop VDD R3II 4.7 MEG R312 100K C 304 C 305 0.05,1 2 15 14 Z 309 14528 3msec TP303 10 T2 9 VDD-9 CD A 16 12 11 13

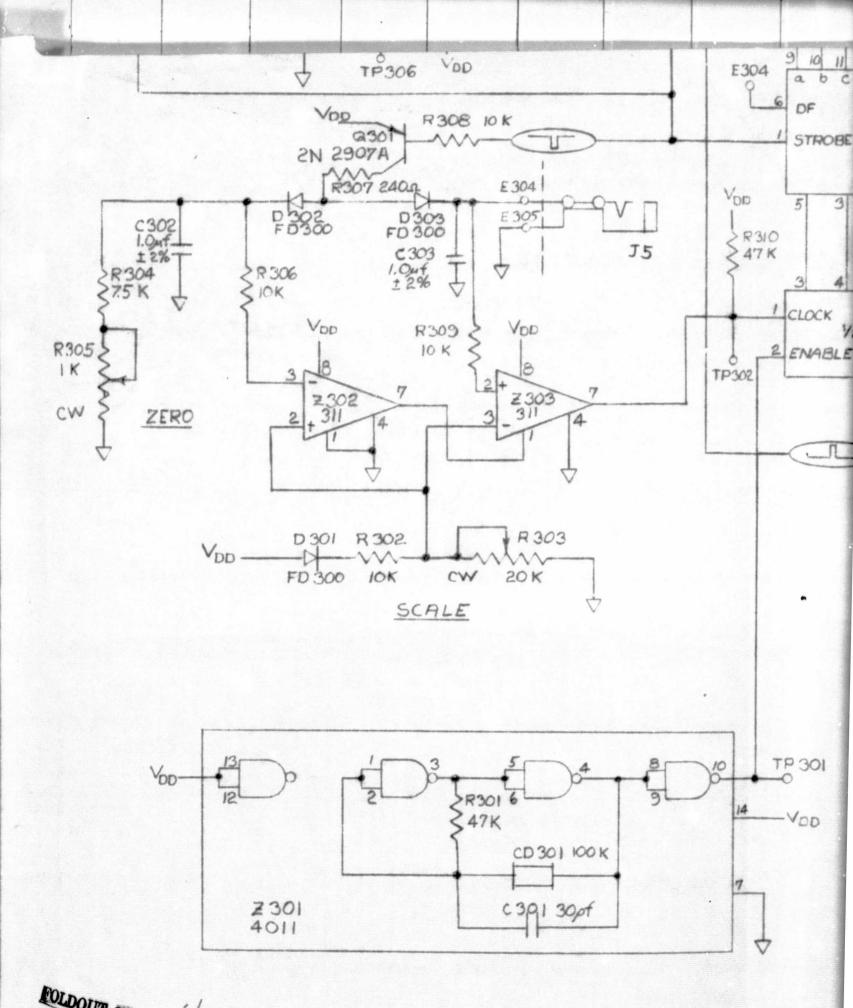
ROLDOUR FRAME 3 nsec VDD (1/10) (135)

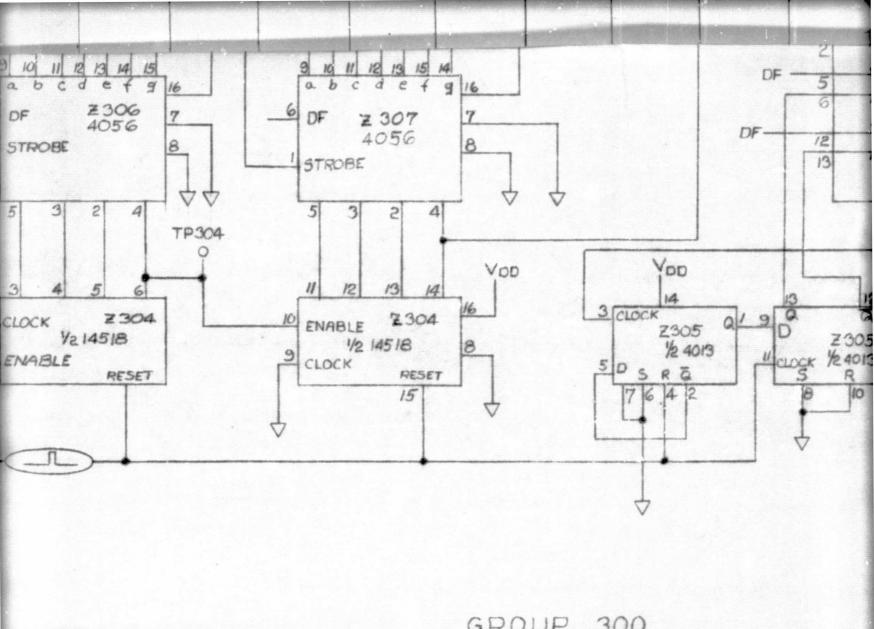
REV.	DESCRIPTION	DATE	APPO
		1	

TO DECIMAL

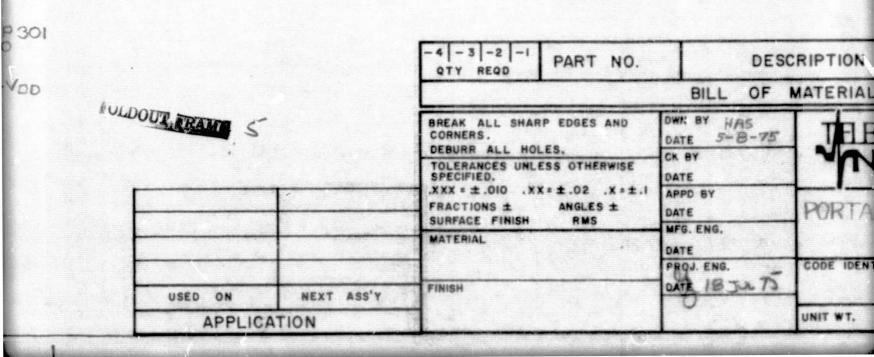
POINT, TENS

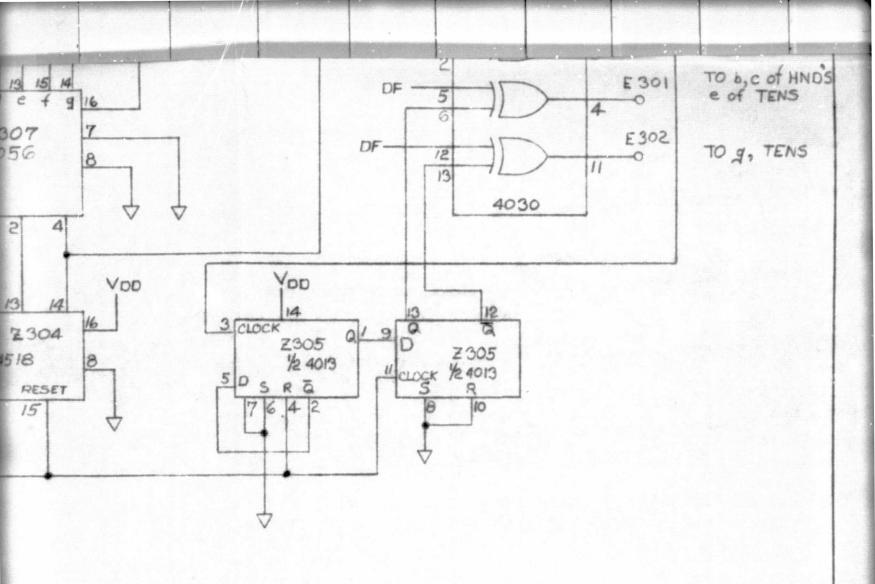


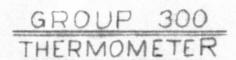




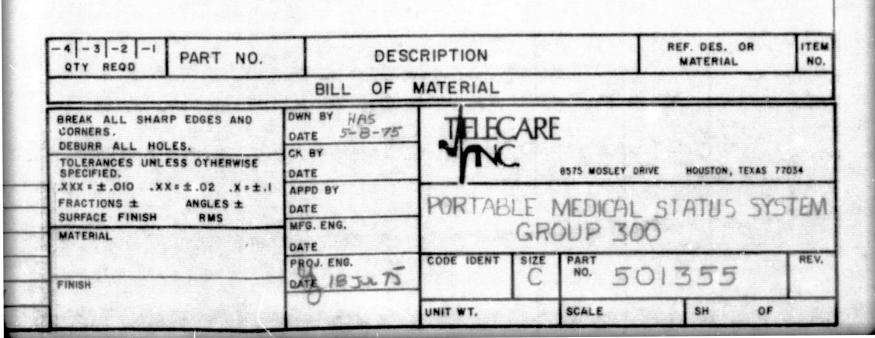
GROUP 300 THERMOMETER











COLODER ARABA

R403 C402 R404

FROM 39 K 0.1 47 K
ECG 2402 6

041

REV.

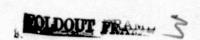
POLDOUT PRAME 3

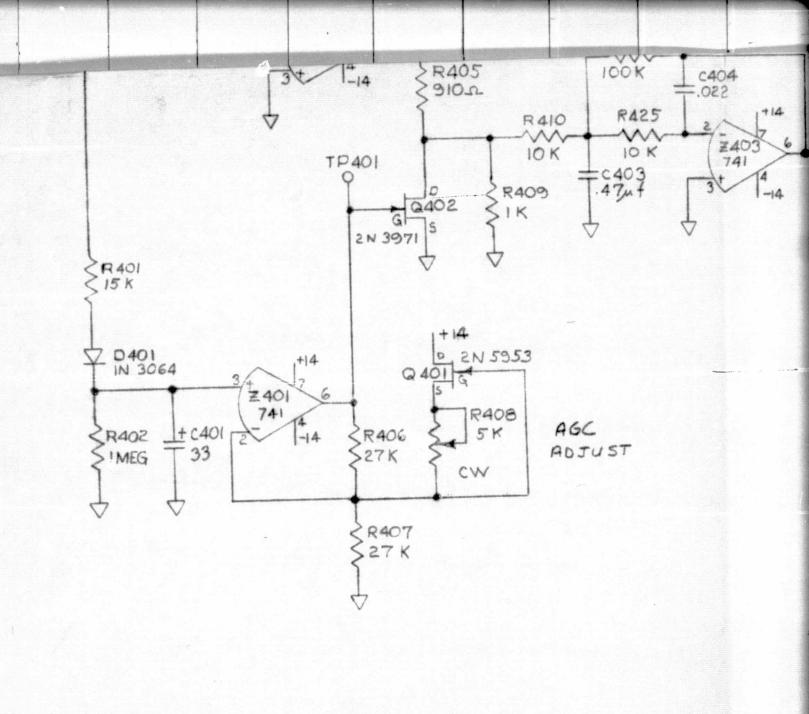
FOLDOUT FRAME

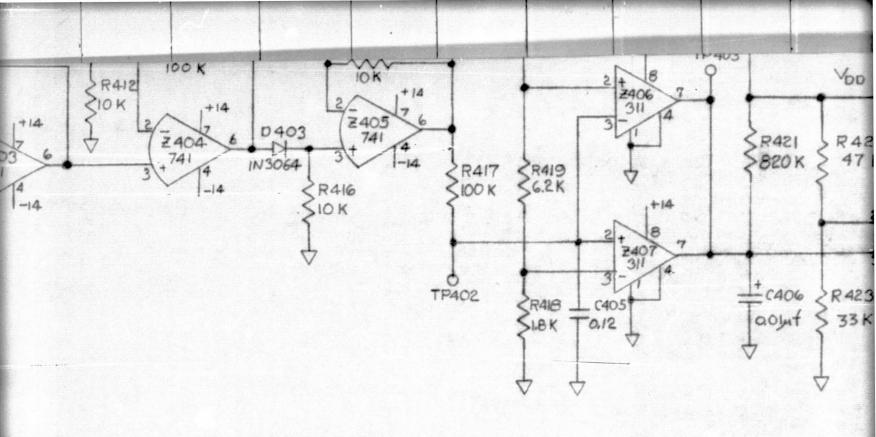
1 R413 TO K 1 N3064 R415

R420 3 K

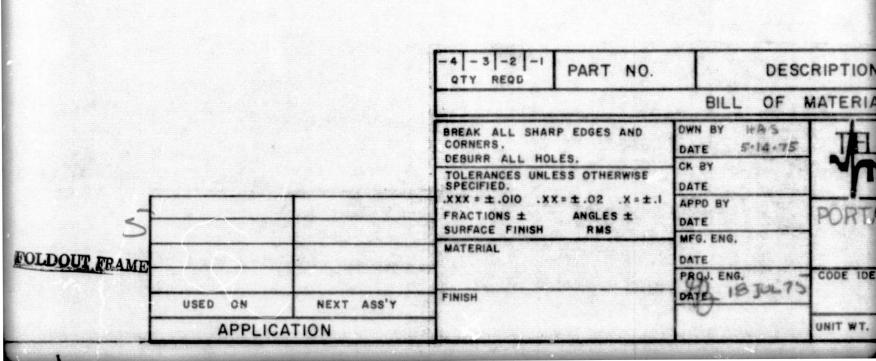
	REVISIONS		
REV.	DESCRIPTION	DATE	APPD

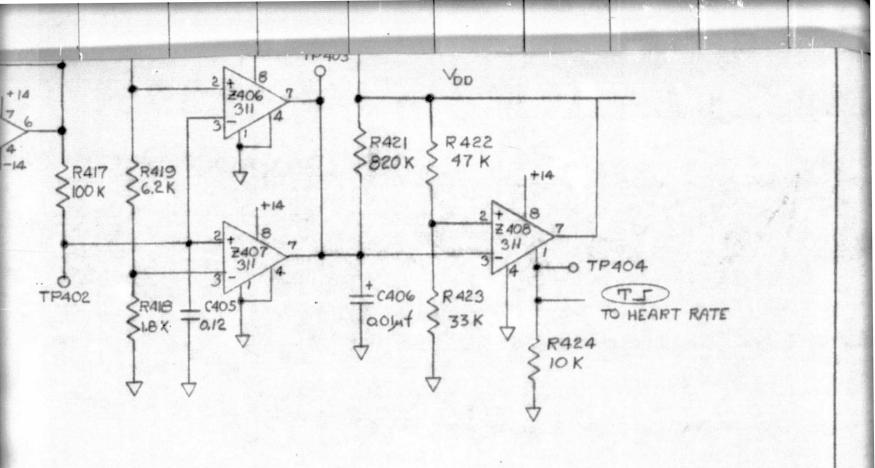






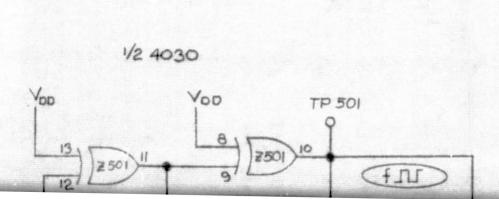
GROUP 400 BEAT DETECTOR

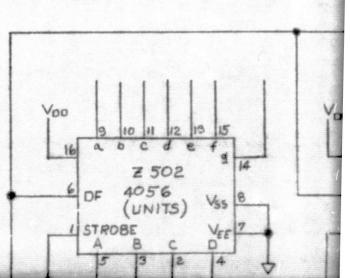


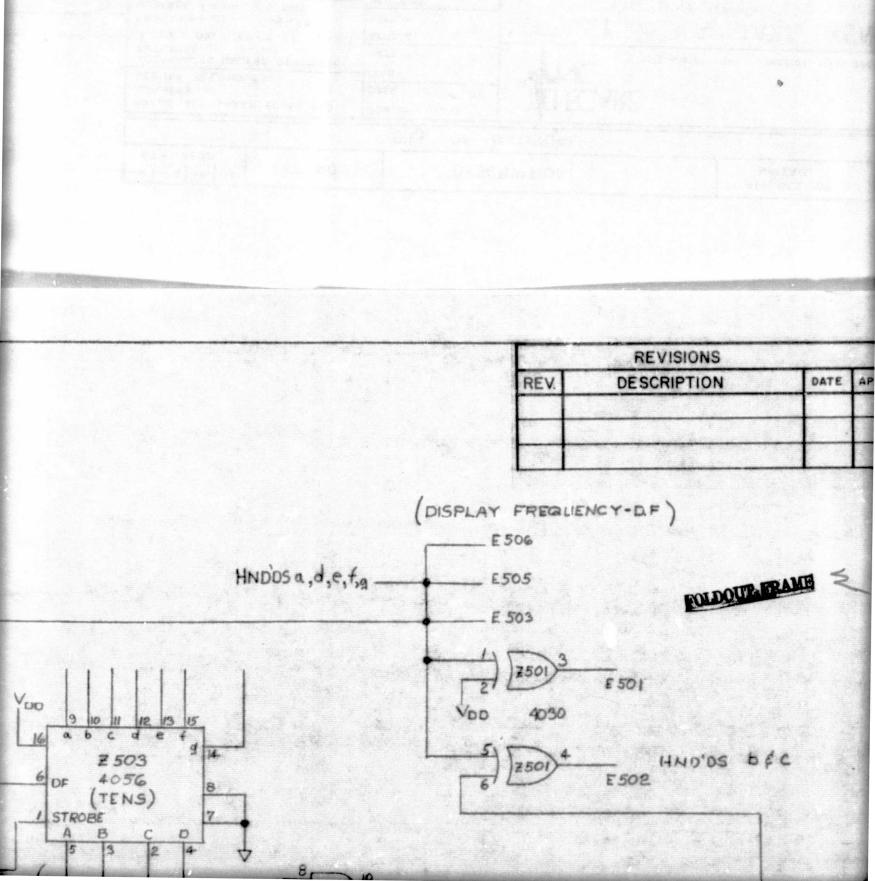


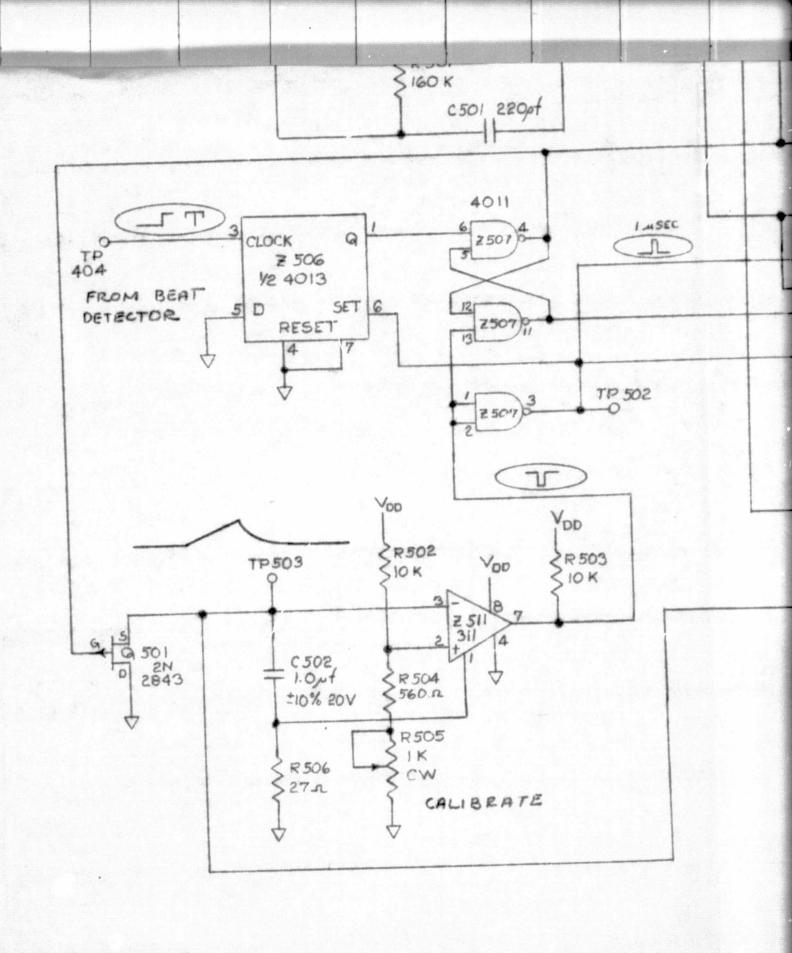


PART NO.	DESCRIPTION				REF. DES. OR MATERIAL	NO.
	BILL OF	MATERIAL				
ES.	DWN BY HAS DATE 5-14-75 CK BY DATE	1	ARE		E HOUSTON, TEXAS	77034
.XXX:±.010 .XX:±.02 .X:±.1 FRACTIONS ± ANGLES ± SURFACE FINISH RMS		PORTAB	Short State	F. Chechol F. F. Sup F. F. Stein, Tenny		STEM
MATERIAL				INCIDIT AC		
	PROJ. ENG.	CODE IDENT	SIZE	NO. 50	1356	REV.
	-		17			-
	ANGLES ± RMS	DATE S-14-75 ES. SS OTHERWISE = ± .02 .X * ± .1 APPD BY ANGLES ± RMS DATE MFG. ENG. DATE	DATE STATE DATE PORTAB DATE MFG. ENG. DATE	DATE SALATE SS OTHERWISE STATE DATE DATE DATE DATE DATE DATE DATE PROJ. ENG. DATE DA	DATE SOLEY DRIVE SS OTHERWISE STATE DATE PROJ. ENG. DATE PROJ. ENG. DATE PROJ. ENG. DATE DATE PROJ. ENG. DATE DATE DATE PROJ. ENG. DATE DAT	DATE SOLEY DRIVE HOUSTON, TEXAS SS OTHERWISE \$\pmu \text{1.02 \cdot x \cdot \pmu \text{1.1}} APPD BY DATE DATE MEDICAL STATUS SYSTEM OF THE PROJ. ENG. DATE PROJ. ENG.

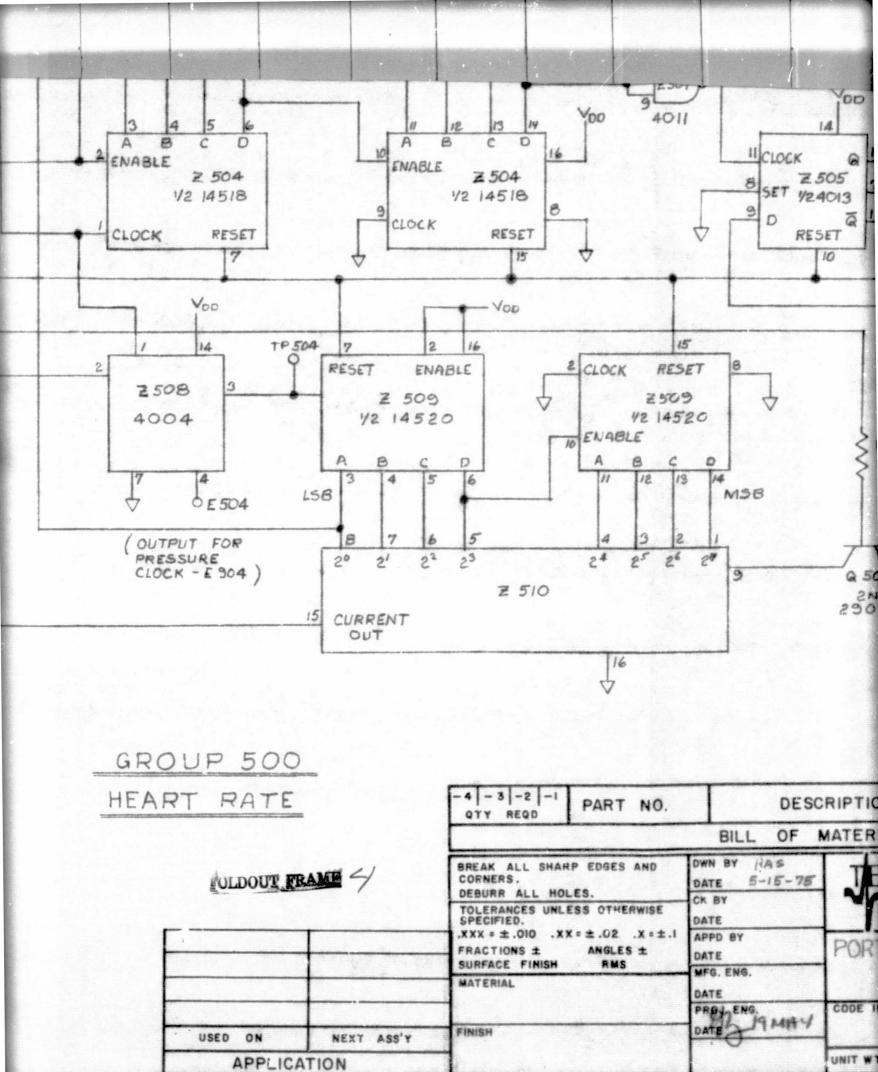


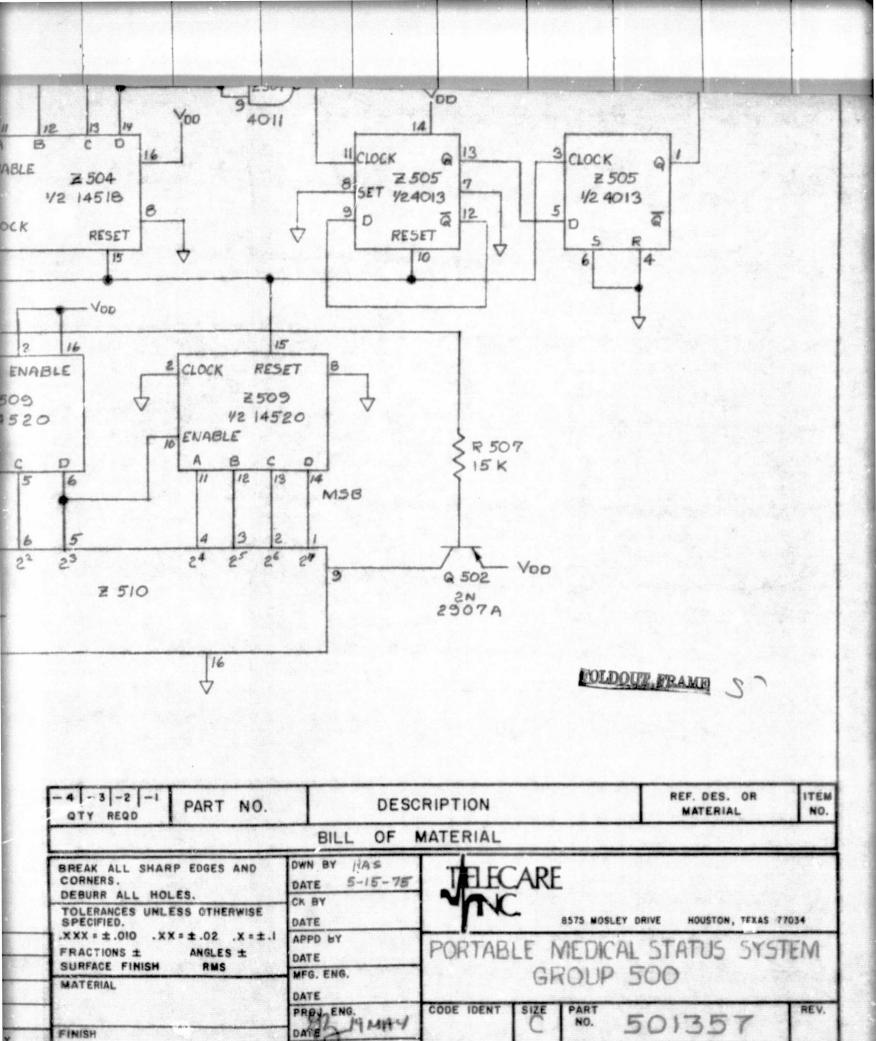






FOLDOUT FRANCE 3



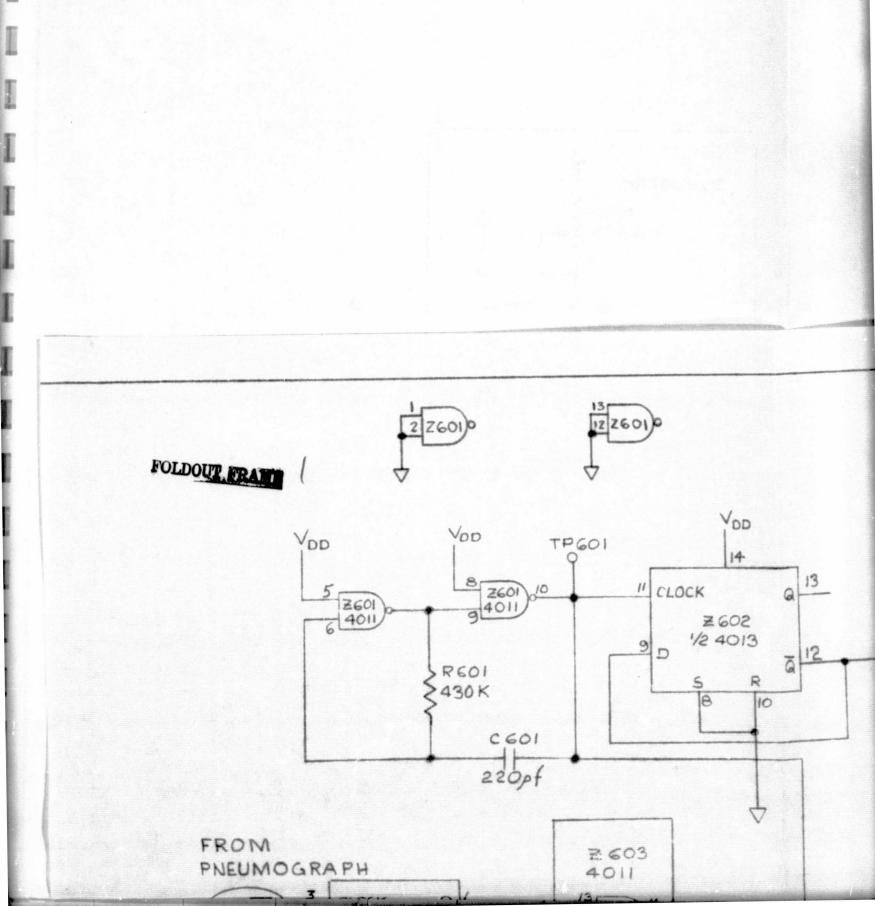


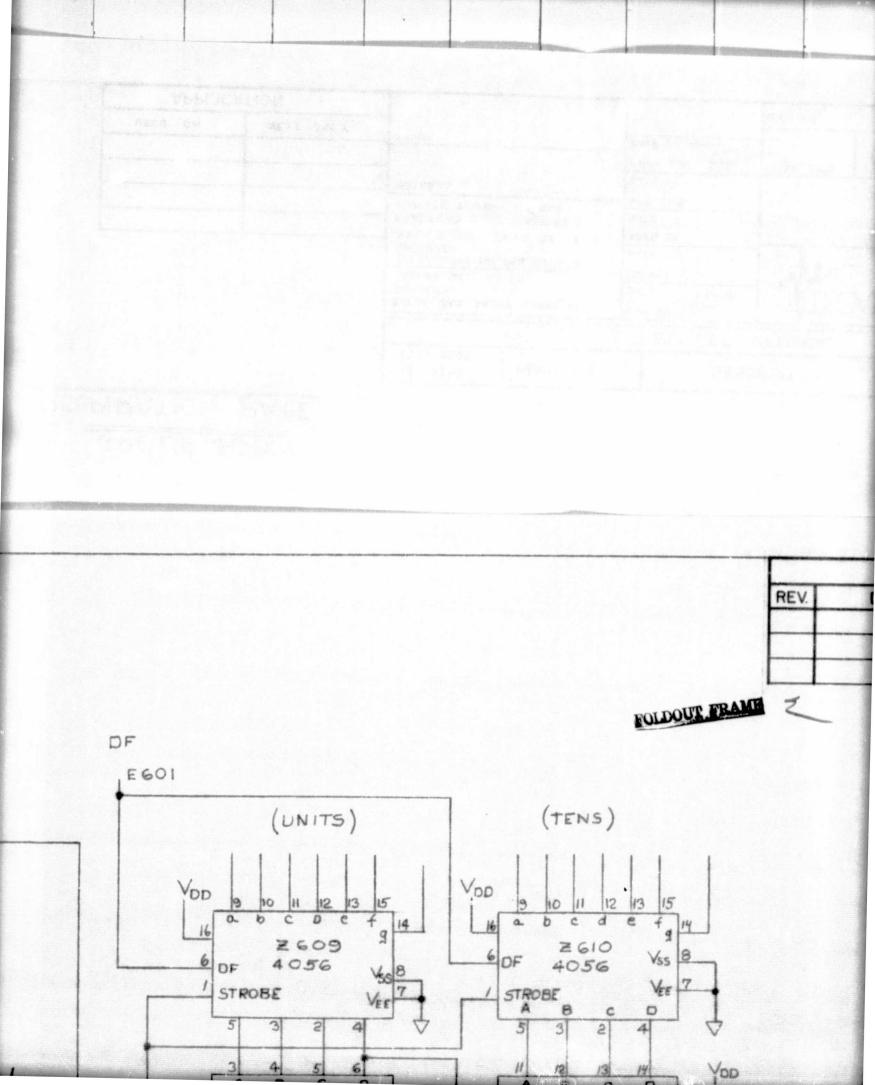
UNIT WT.

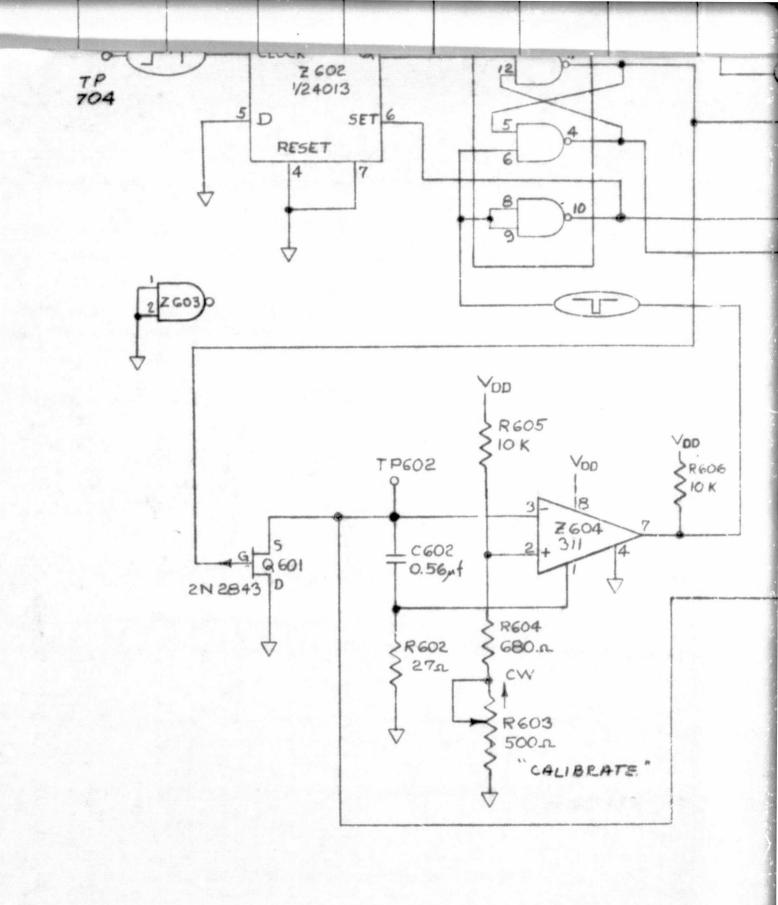
SCALE

SH

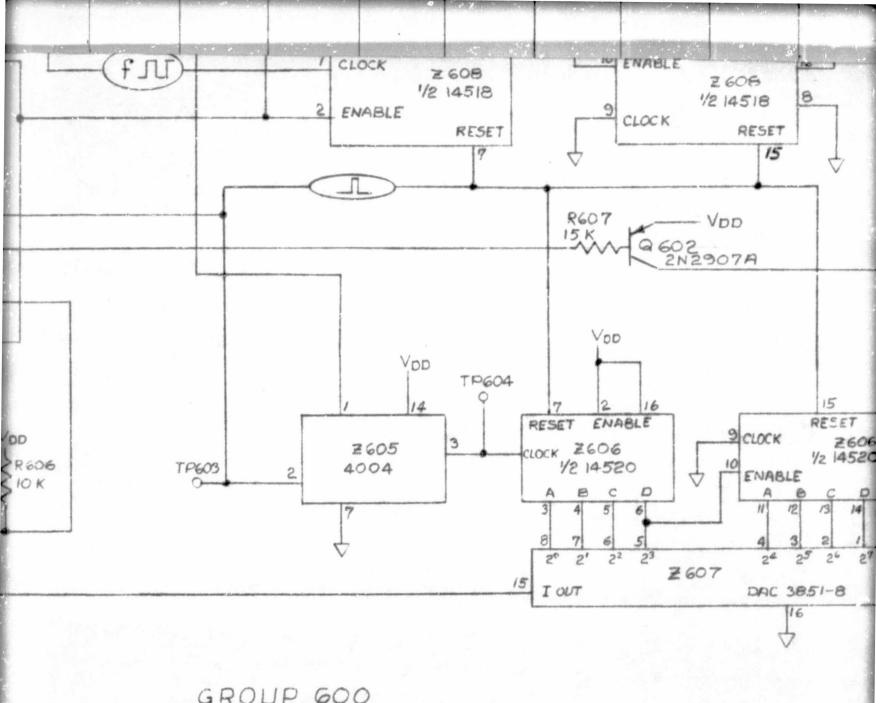
OF



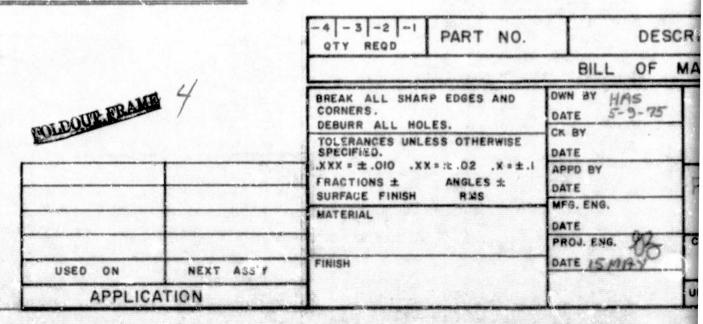


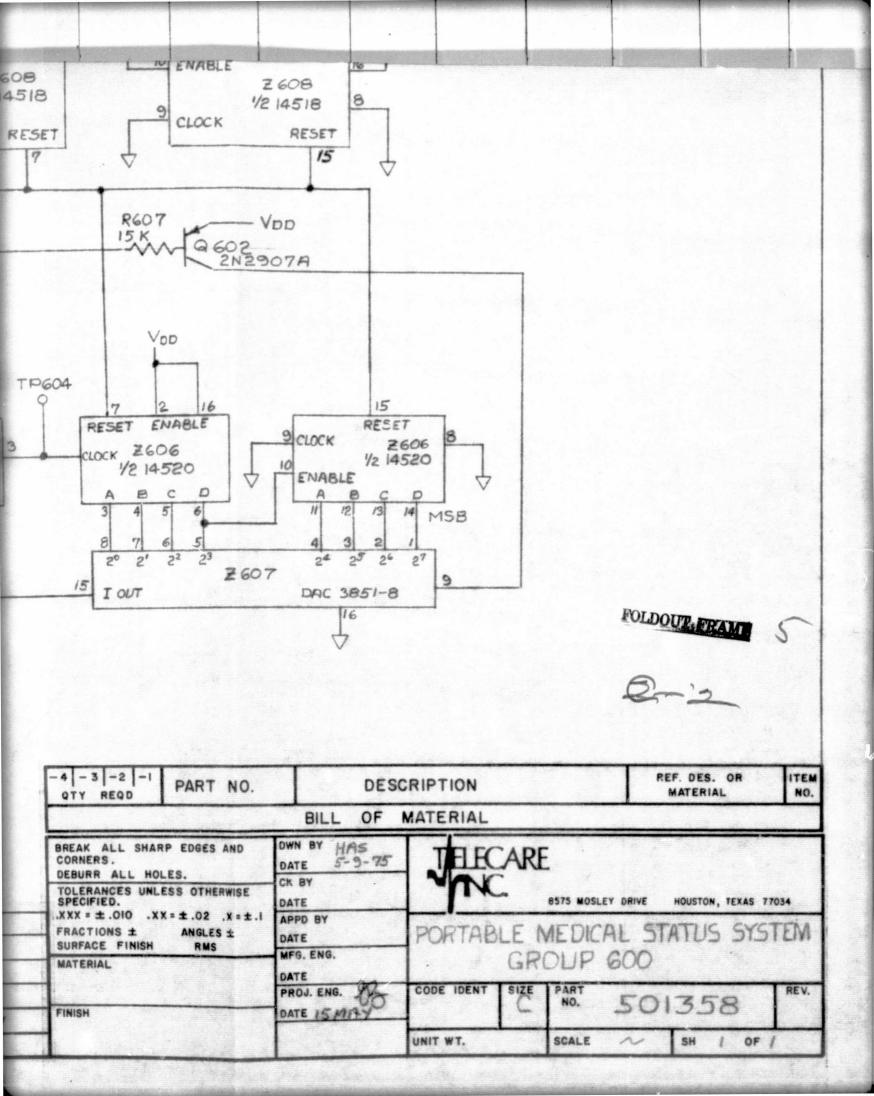


FOLDOUR TRAVE 3

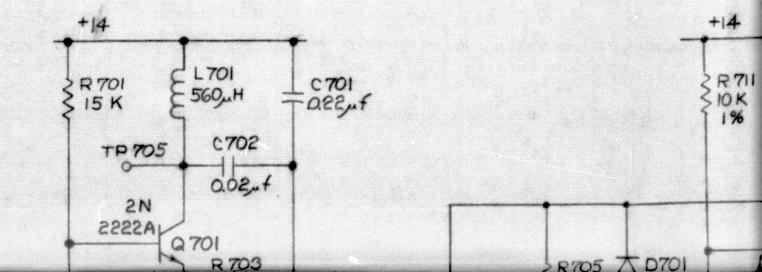


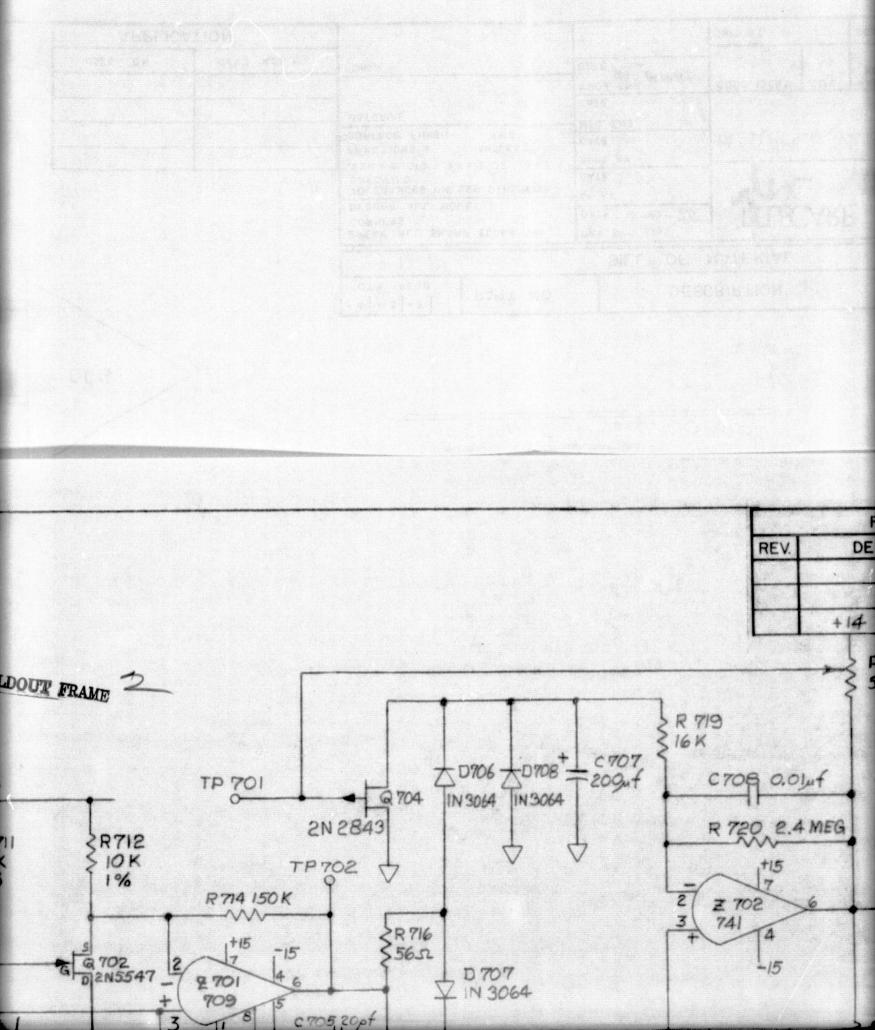
GROUP 600 RESPIRATION RATE

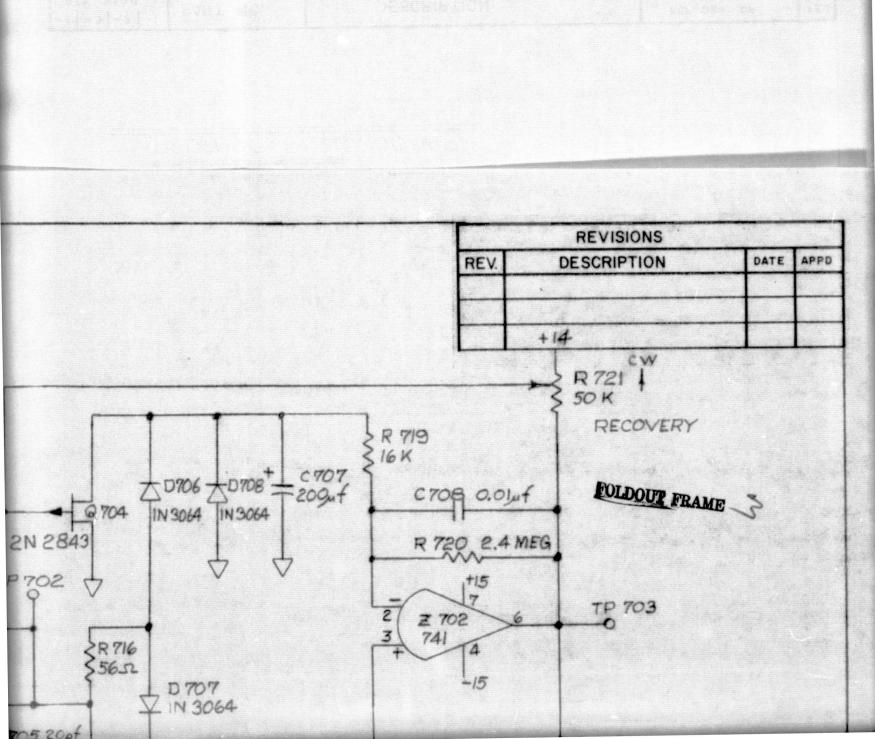


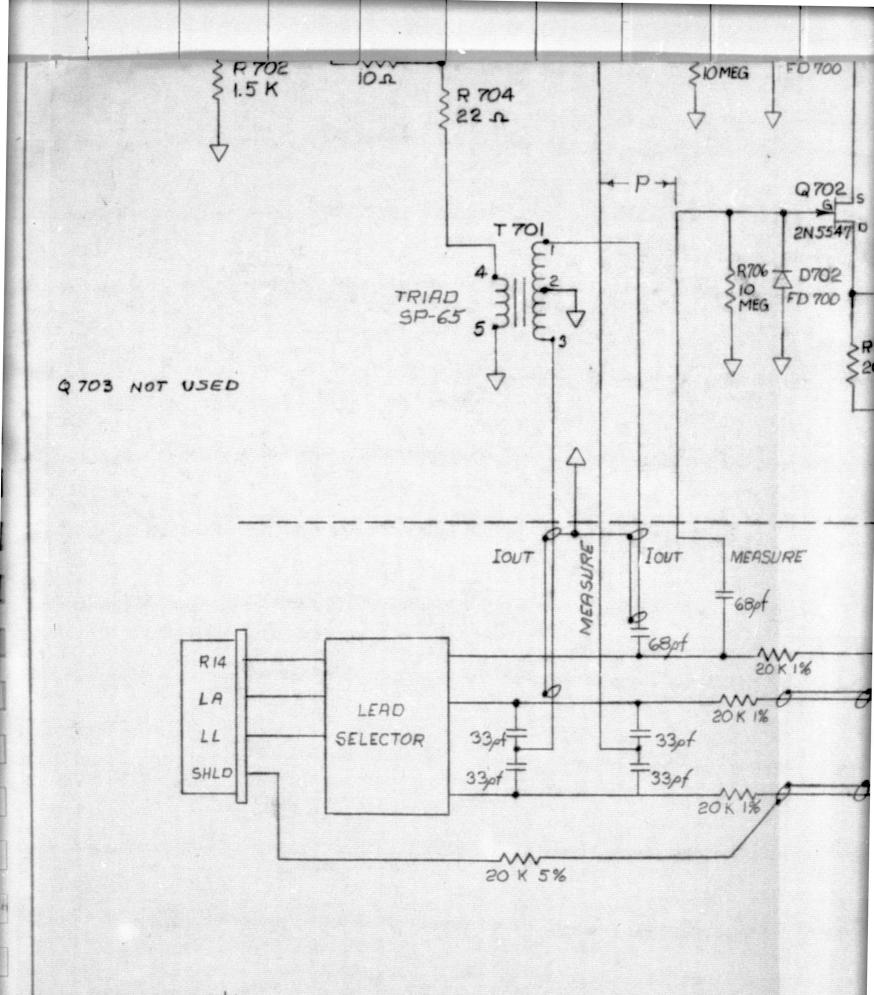


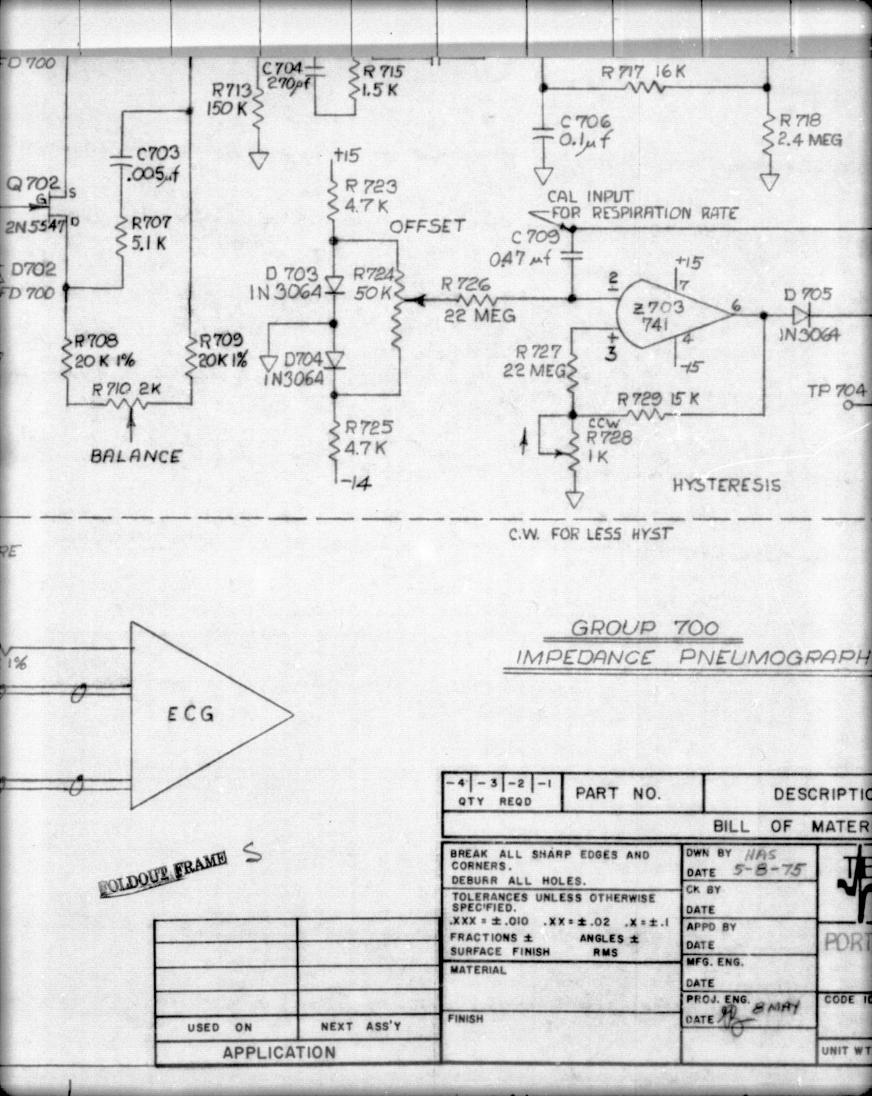
FOLDOUTATRAME

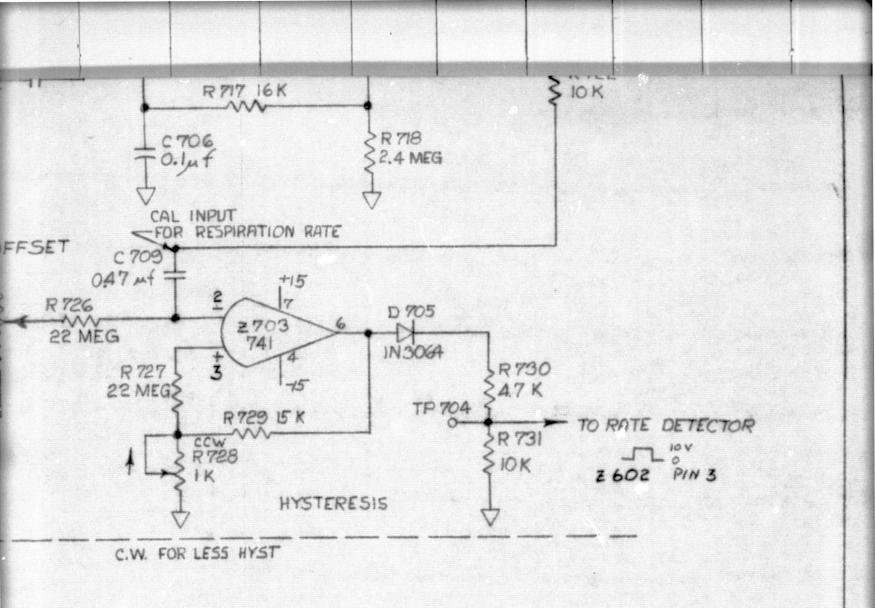






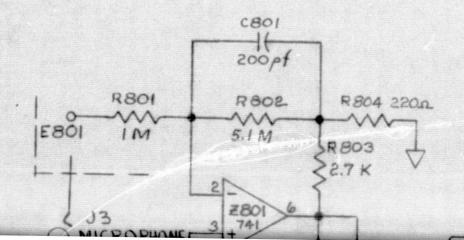


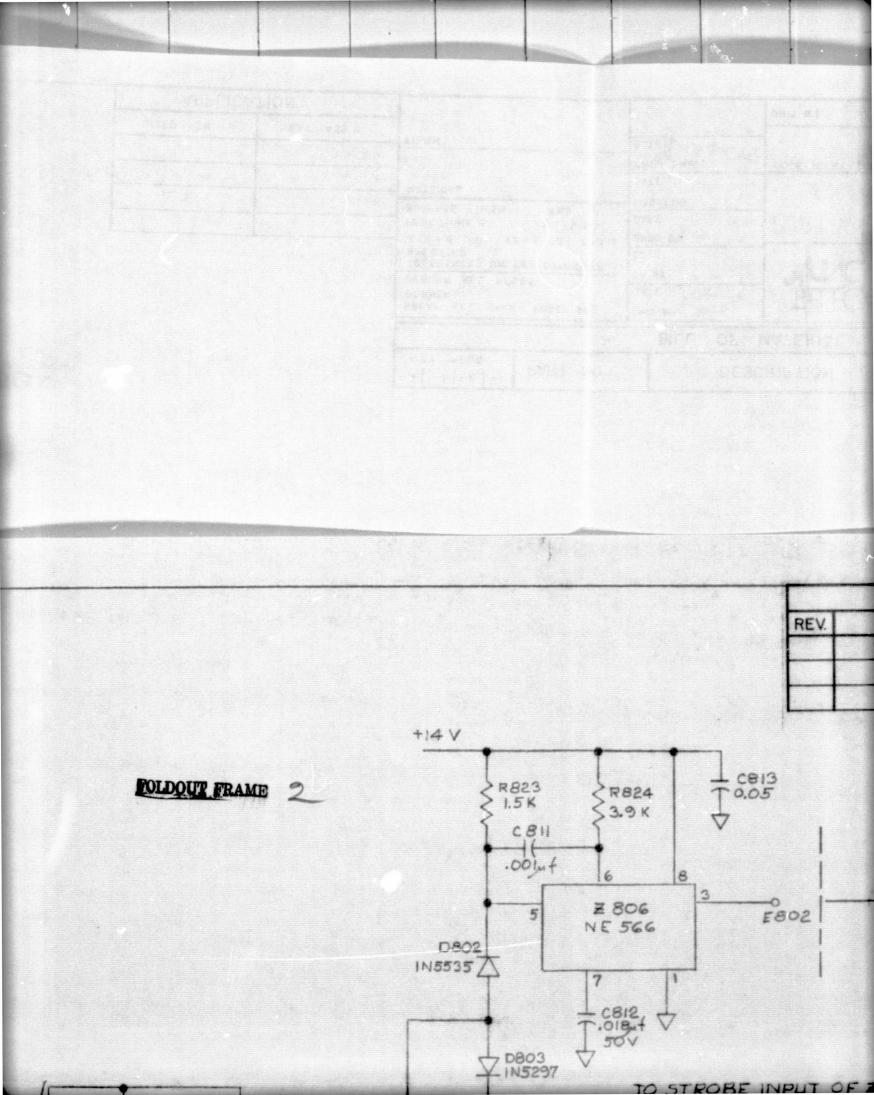


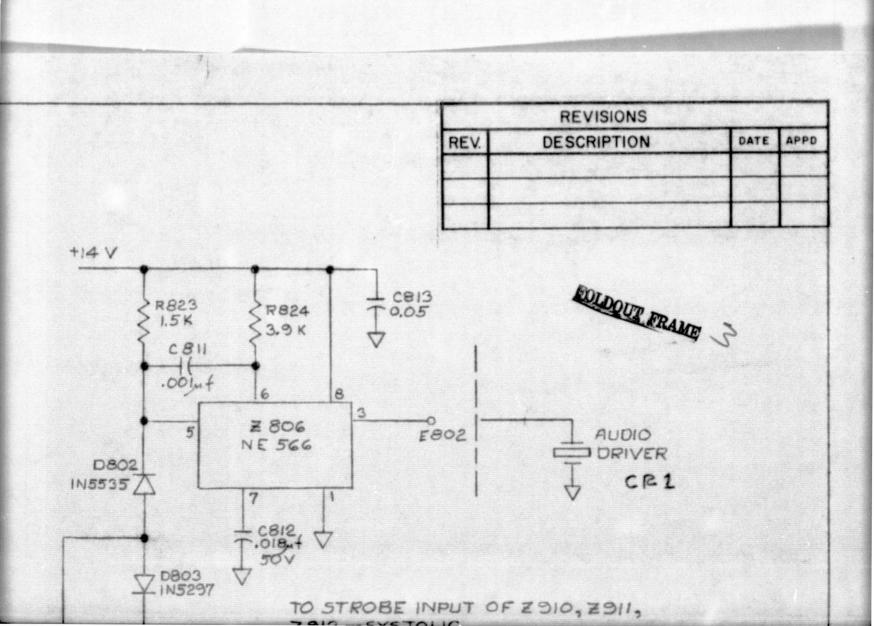


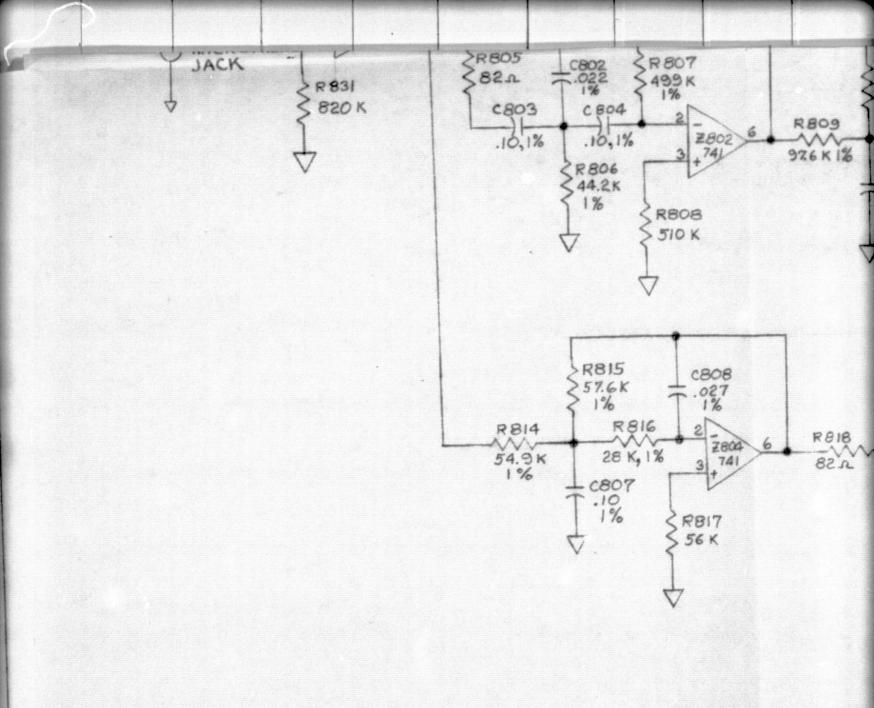
GROUP 700 IMPEDANCE PNEUMOGRAPH

-4 -3 -2 -1 PART NO.	DESC	RIPTION			REF. DES		NO
	BILL OF	MATERIAL					
BREAK ALL SHARP EDGES AND CORNERS. DEBURR ALL HOLES. TOLERANCES UNLESS OTHERWISE SPECIFIED.	DWN BY HAS DATE 5-8-75 CK BY DATE	1	ARE	8575 MOSLEY	DRIVE HOUSTO	N, TEXAS 7	7034
XXX = ± .010 .XX = ± .02 .X = ± .1 FRACTIONS ± ANGLES ± SURFACE FINISH RMS	APPD BY DATE MFG. ENG.	PORTABI			STATUS	SYS	EM
MATERIAL	DATE	GROUP 700					
FINISH	DATE BANAY	CODE IDENT SIZE PART NO. 501		01359	1359		
	V						A CONTRACTOR



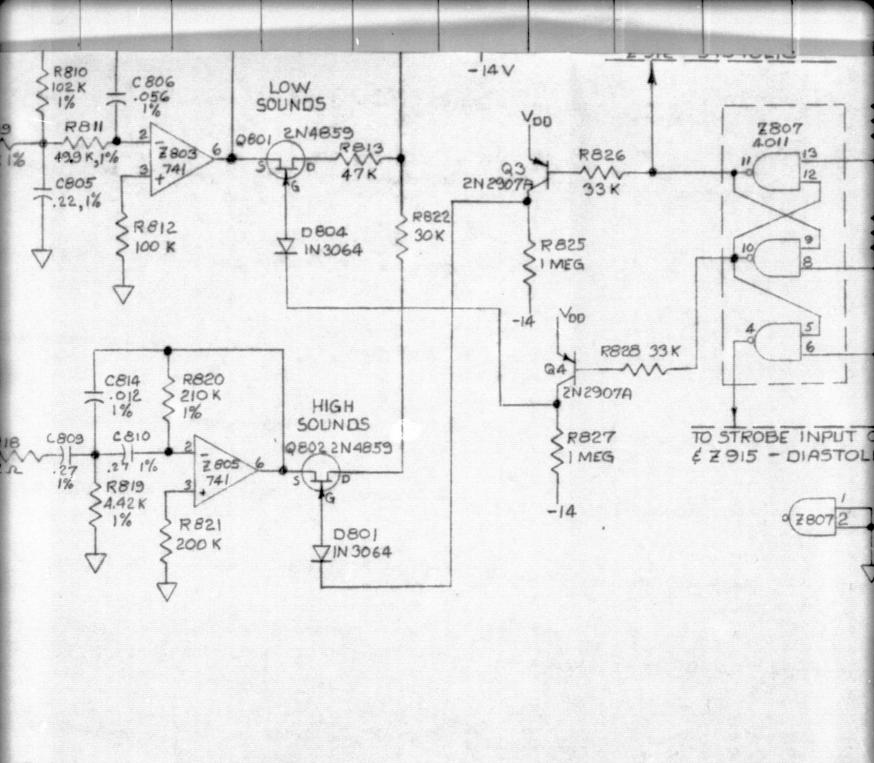


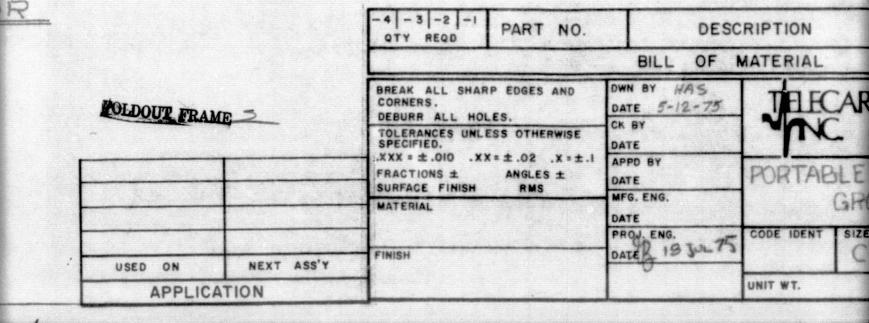


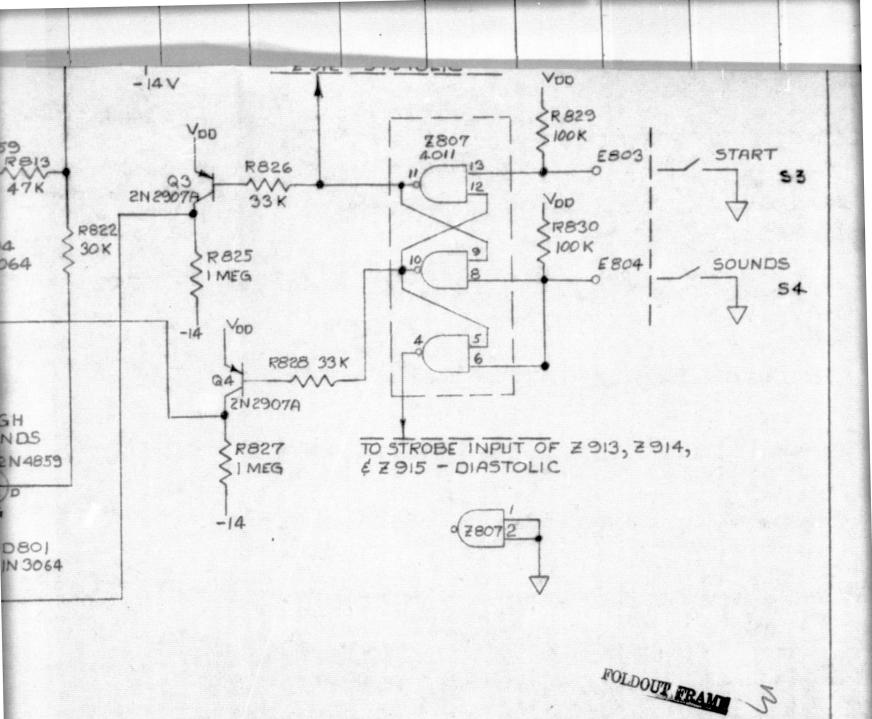


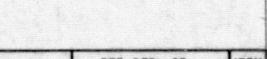
SOUNDS PROCESSOR

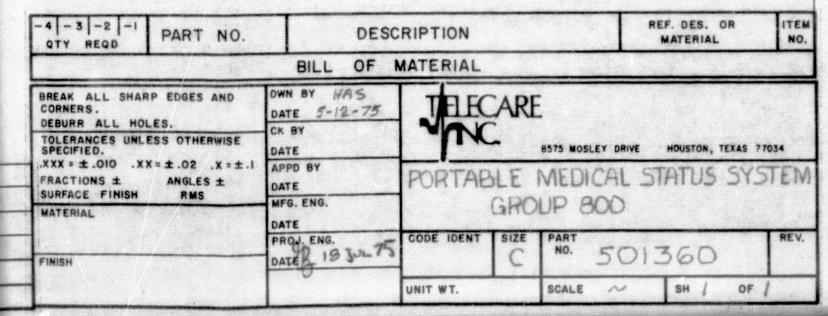
BOLDOUT FRAME

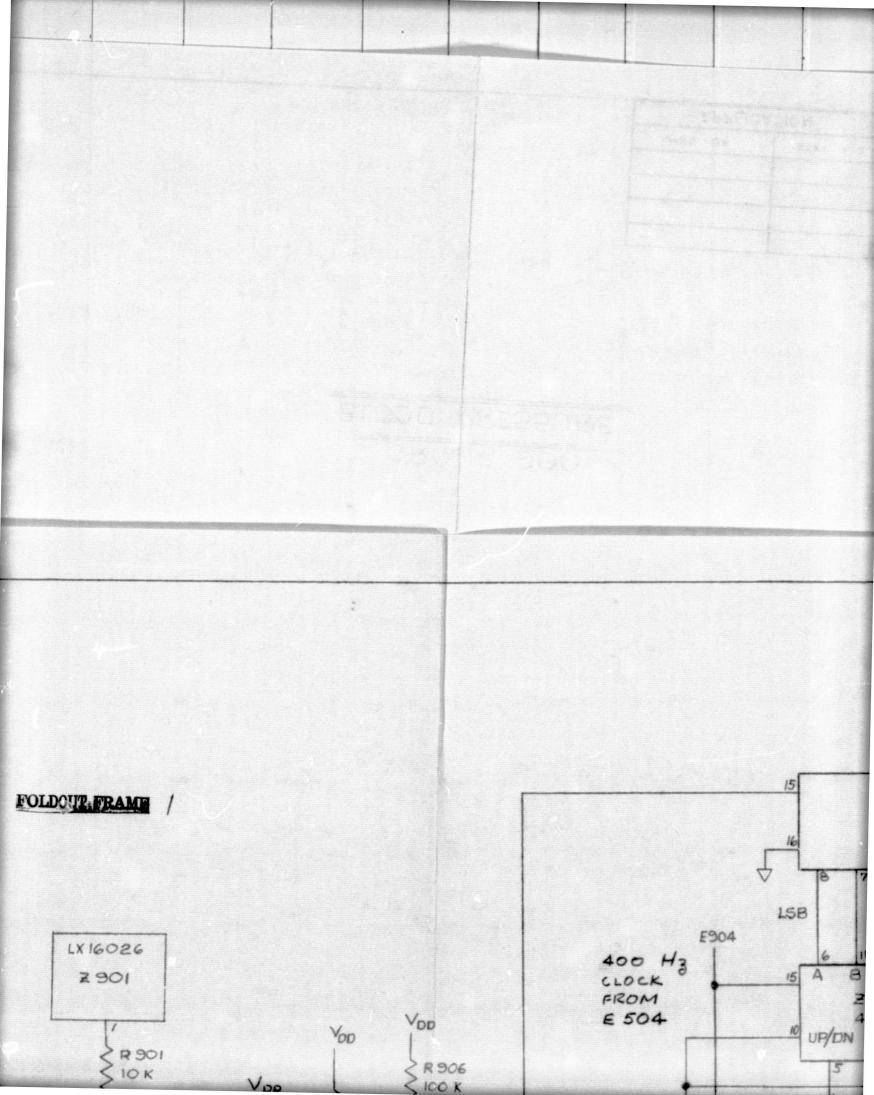


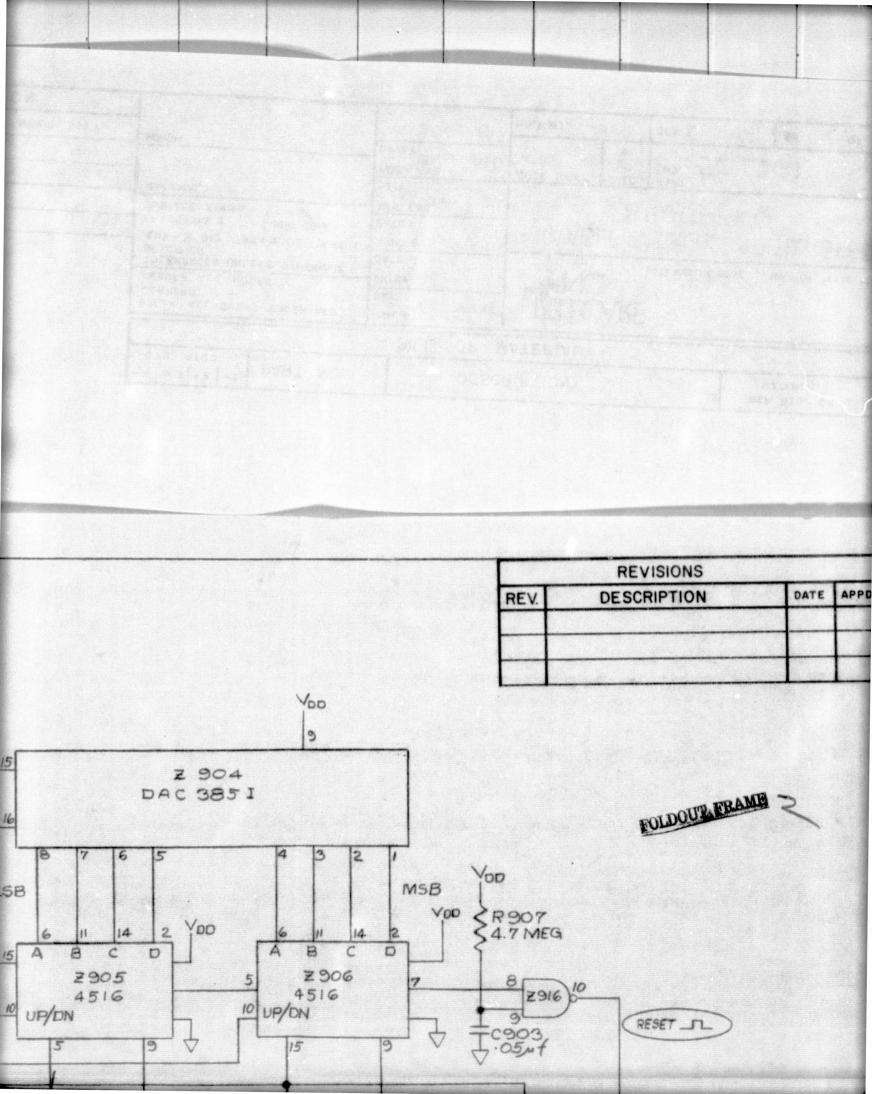


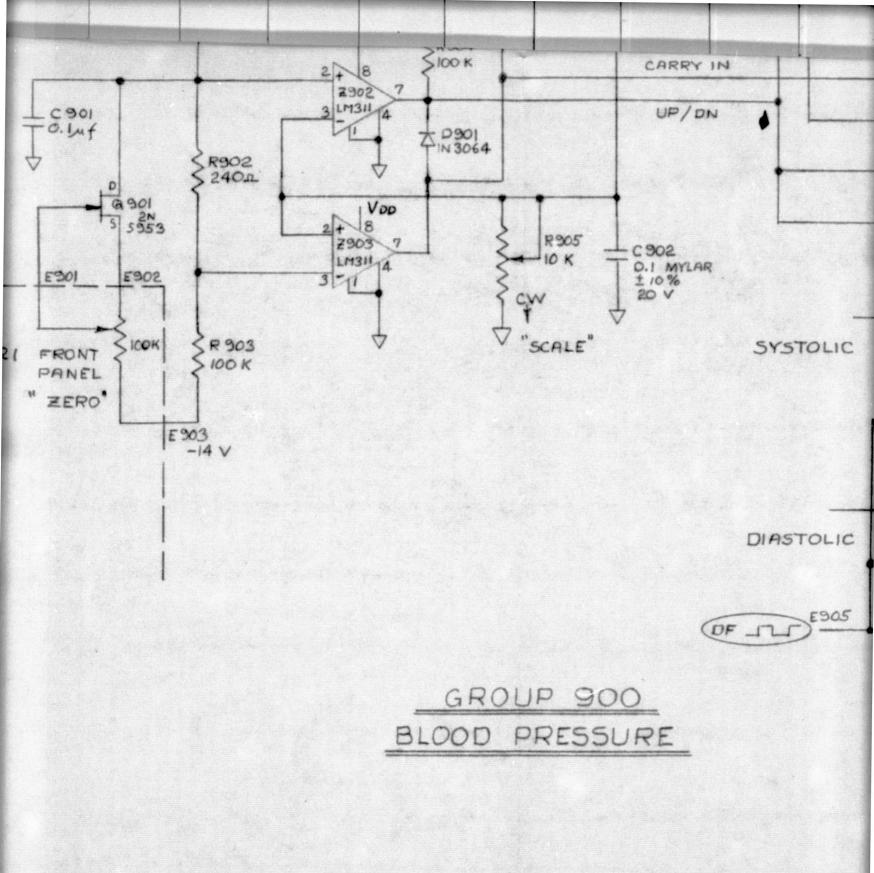






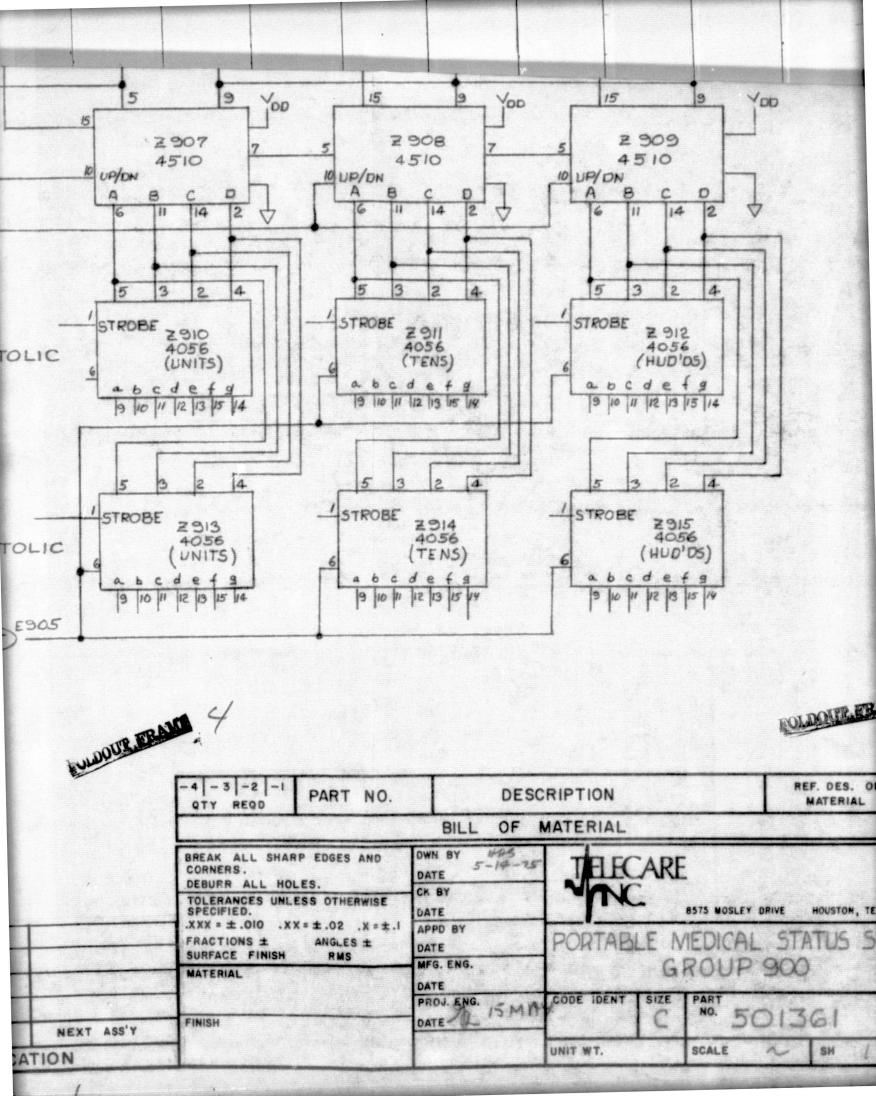


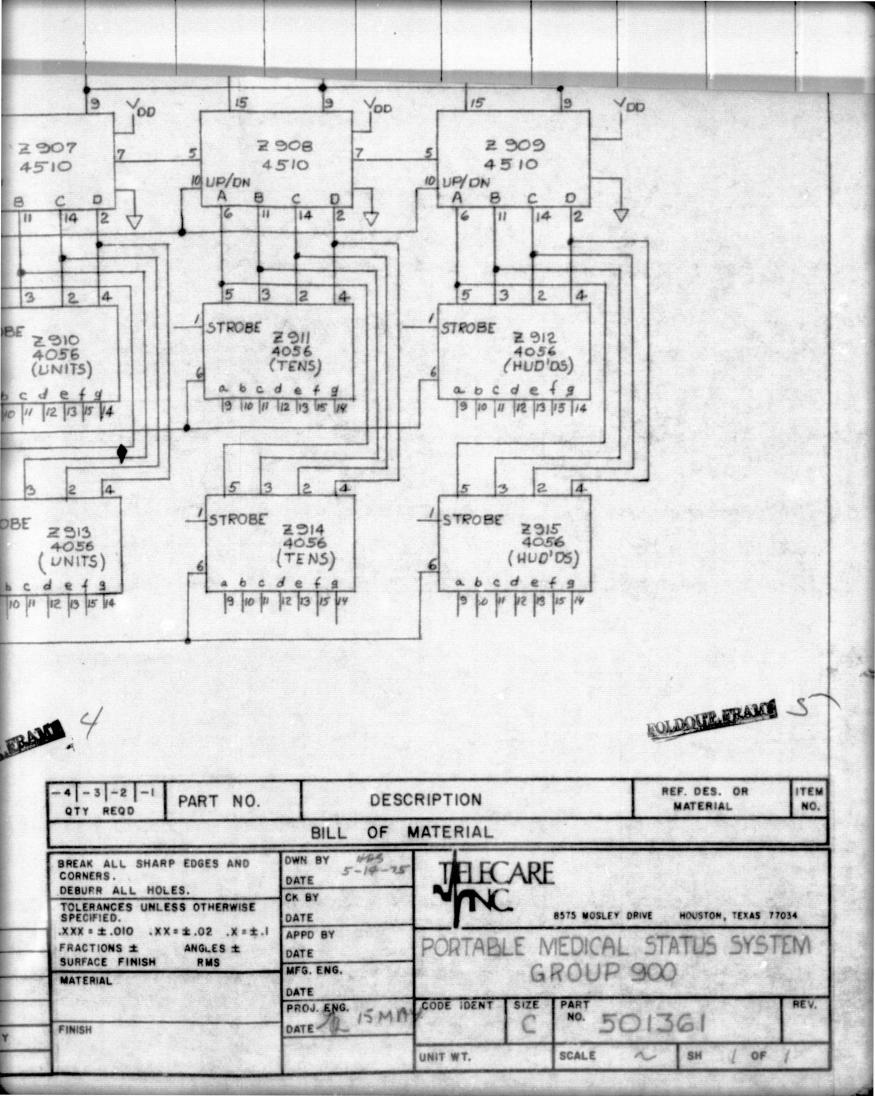


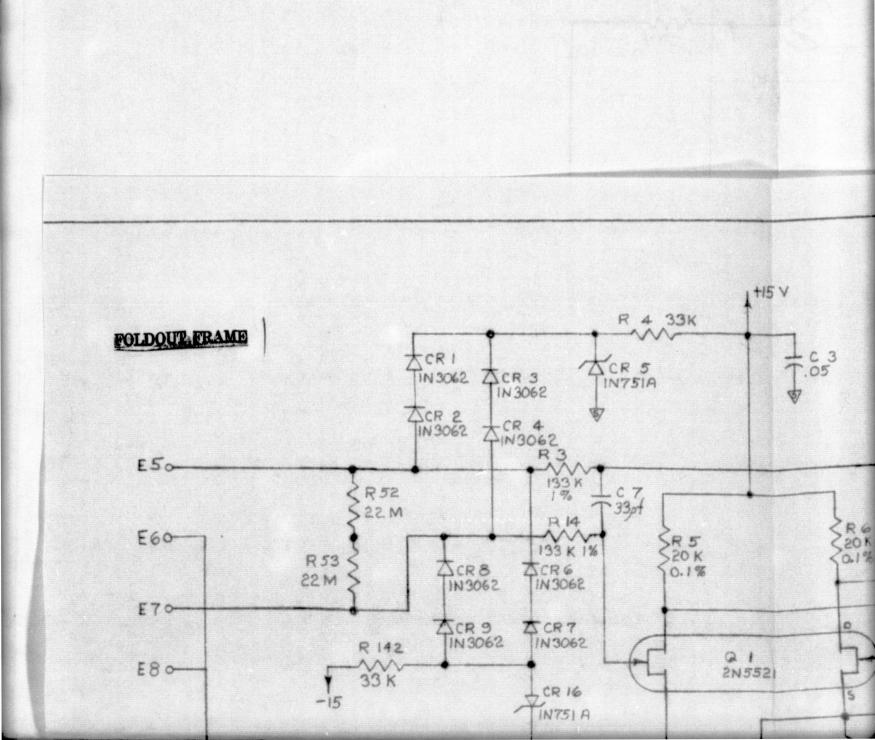


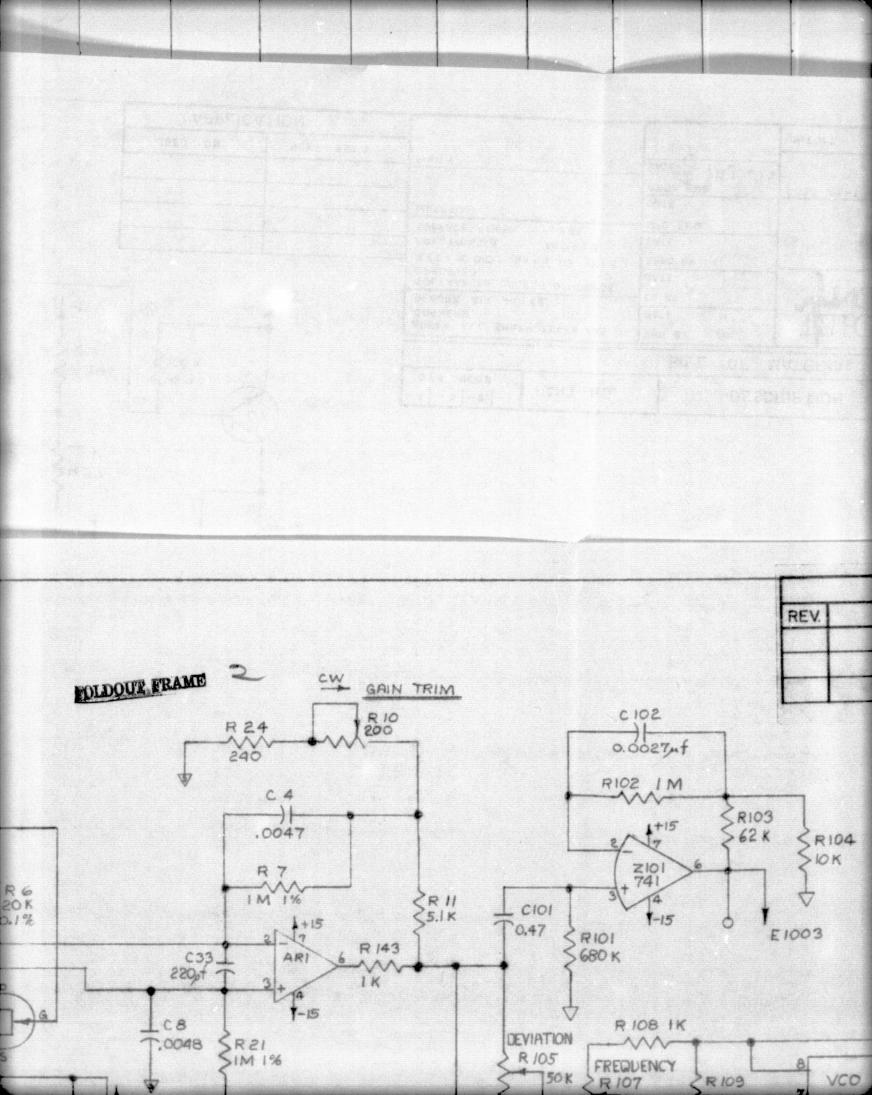
FOLDOUR FRANT

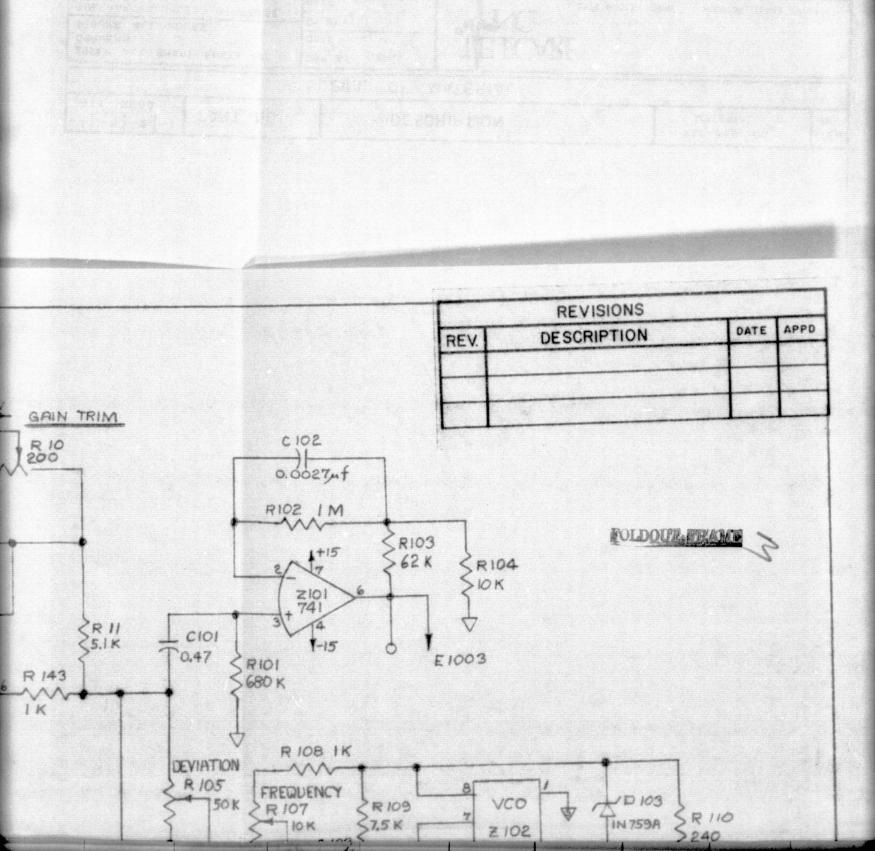
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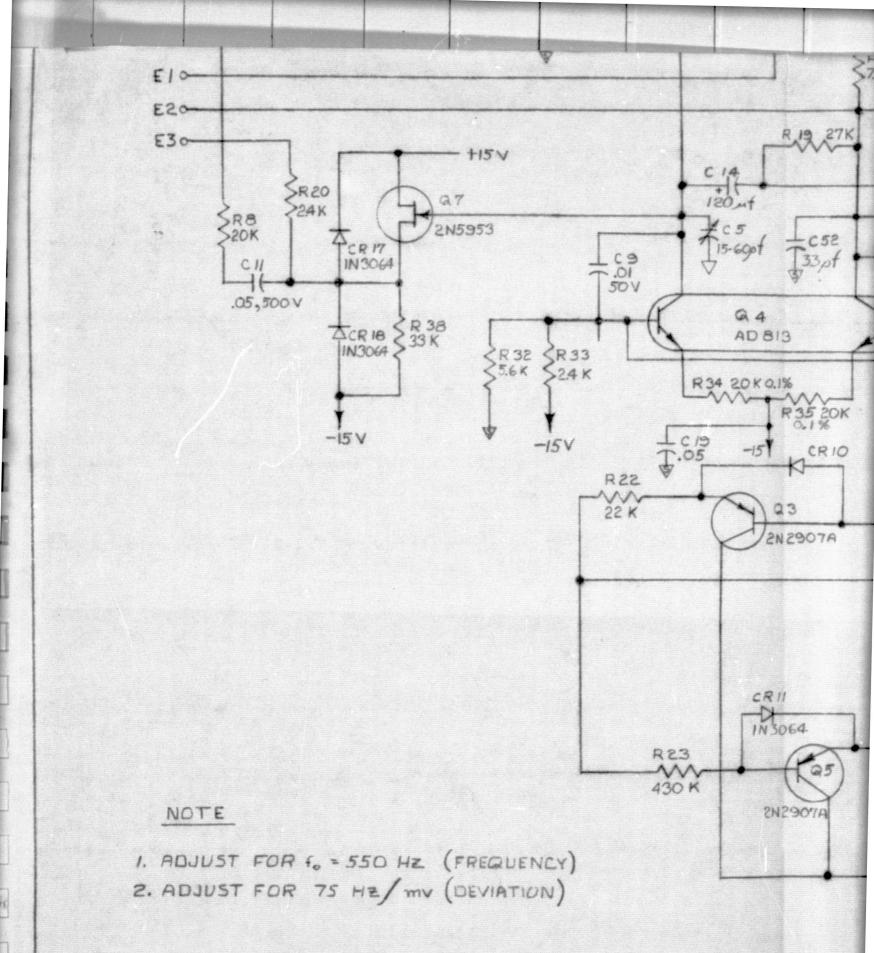




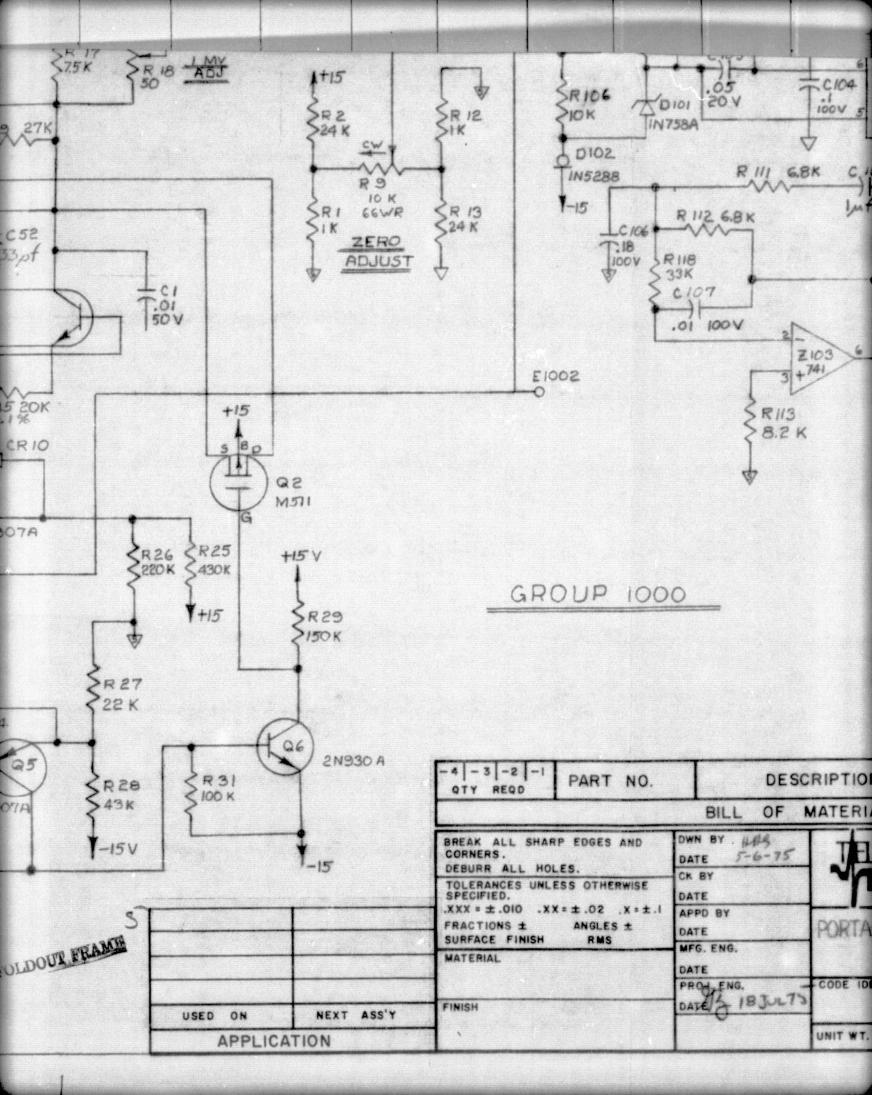


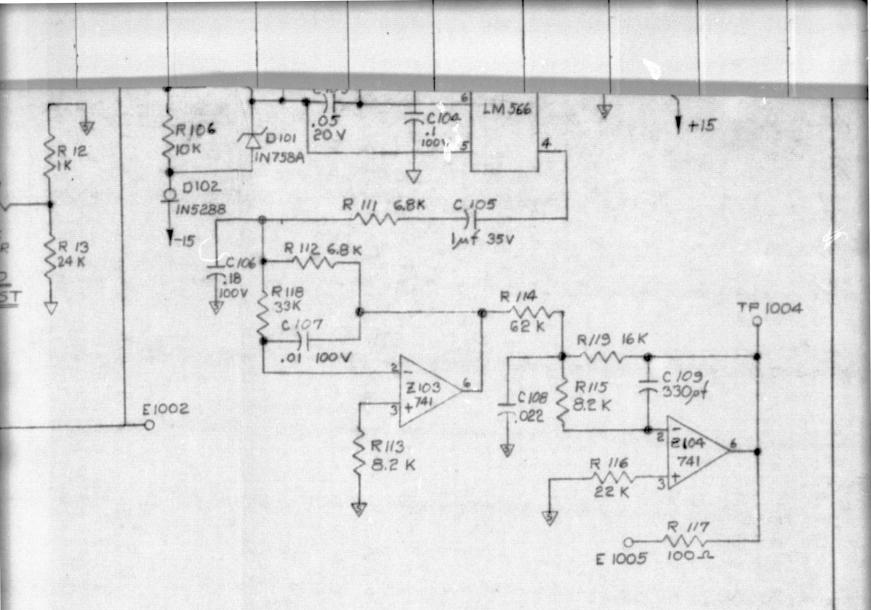






FOLDOUT FRAME





GROUP 1000



